# E-government innovation for effective service delivery: A case of the Gauteng Department of Education Online Applications.

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# ABSTRACT

E-government has been seen to have great impact on how the public sector conducts its business, interacts within itself, with private sector businesses and with citizens in general as the government's clients (Van Dijk and Croucamp, 2007:60). Therefore, enhancing public sector performance through the provision of services in new, better, and often cheaper ways (though this is subject to debate) is now the key goal of most governments globally. The primary objective of this study was to examine the effectiveness and efficiency of the newly introduced online application and learner admission system as a service delivery improvement e-government initiative in the Gauteng Department of Education public schools and the extent to which the GDE customers are ready to fully adopt the innovation. The study was guided and informed by the frameworks of the Technology Acceptance Model (TAM), the Diffusion of Innovation (DOI) and to some extent by the E-government Roadmap in the Developing world. Global and local literature on e-government was also reviewed in order to bring out the value of e-government implementation in public service delivery. The study engaged a mixed method approach by mixing both the qualitative and quantitative research approaches in the collection of data. Hence, while the study leaned heavily on the quantitative approach, using a survey questionnaire to collect survey data that can be numerically interpreted, qualitative data was also gathered through the use of interviews with purposefully sampled information-rich participants whose experiences the researcher wished to understand, thus enabling diverse viewpoints that cast more light upon the research problem. It was revealed in the study, that though positive benefits of e-government have been observed through the implementation of online services in the GDE, e-readiness in the Sedibeng

West district to some extent is still negatively affected by low literacy levels among citizens, the prevalence of the digital divide, lack of proper enabling ICT infrastructure to support e-service delivery in schools as well as lack of public involvement in the planning of the e-government initiatives. Recommendations are made on how the challenges encountered can be addressed to speed up the implementation and citizen adoption of e-government initiatives

**Keywords**: **government, e-government, ICT, online application, digital divide, e-services, e-democracy, internet access, e-readiness, public service delivery**

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# DECLARATION

I declare that:

**E-government innovation for effective service delivery: A case of the Gauteng Department of Education Online Applications.**

is my own independent work, that all the sources quoted have been indicated and acknowledged by means of complete reference, and that I have not previously submitted this dissertation for a degree at any university.

**Dorothy Kanyemba**

_____ _____

Signature Date

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# LIST OF ABBREVIATIONS

| | |
|---|---|
| ADA | Austrian Development Agency |
| ANAO | Australian National Audit Office |
| BI | Behavioural intention |
| BPG | Batho Pele Gateway |
| CGICTPF | Corporate Governance of ICT Policy Framework |
| DHA | Department of Home Affairs |
| DOC | Department of Communication |
| DOE | Department of Education |
| DOI | Diffusion of Innovation |
| DPSA | Department of Public Service and Administration |
| EduNet | Education Network |
| EFT | Electronic file transfer |
| EIU | Economist Intelligence Unit |
| ERDW | E-government Roadmap for the Developing World |
| FTTH | Fibre to the home |
| GCIS | Government Communications Information Service |
| GDE | Gauteng Department of Education |
| GITO | Government Information Technology Officer |
| GITOC | Government Information Technology Officers' Council |
| G2C | Government to Citizen |

| | |
|---|---|
| G2B | Government to Business |
| G2G | Government to Government |
| ICT | Information Communication Technology |
| IMST | Information Management System and Technology |
| IT | Information Technology |
| ITU | International Telecommunication Union |
| MEC | Member of the Executive Council |
| MISS | Minimum Information Security Standards |
| MIOS | Minimum Interoperability Standards |
| MPCC | Multi-purpose Communication Centres |
| NTA | National Tax Agency |
| PEOU | Perceived ease of use |
| PU | Perceived usefulness |
| PSR | Public Service Regulations |
| PSICTM | Public Service ICT Management |
| RSA | Republic of South Africa |
| SAFAD | Swedish Agency for Administrative Development |
| SARS | South African Revenue Services |
| SMART | Simple, Moral, Accountable, Responsive and Transparent |
| SASSA | South African Social Security Agency |
| SITA | State Information Technology Agency |

| | |
|---|---|
| SMME | Small and Medium Enterprises |
| TAM | Technology Acceptance Model |
| UNESCO | United Nations Educational, Scientific and cultural Organisation |
| UNPAN | United Nations Public Administration Network |
| WPTPS | White Paper of the Transformation of Public Services |
| WPTPSD | White Paper on the Transformation of Public Service Delivery |

# CHAPTER 1: THE PROBLEM AND ITS SETTING

## 1.1 INTRODUCTION AND BACKGROUND

There is a plethora of evidence in literature on the use of e-government innovations in the delivery of services by governments of both developed and developing states (ANAO, 2004; Ndou, 2004; Naz, 2009; Chatfield, 2009; ADA, 2011; Esmat Ara, 2015; Anni, 2016; Heeks, 2004). With the world becoming a global village that is technologically connected and driven, state governments, globally, are becoming more aware of the value of e-government innovation in improving service delivery and ultimately achieving good governance. The road to effective service delivery is paved through improved processes, plus more access to government information and services by the citizens (Quina, 2015). E-government innovation goes far in achieving these goals.

E-government is explained as the ability to obtain and provide services through non-traditional electronic ways, thus enabling access to government information and services anywhere, anytime on equal basis for the continuous optimization of service delivery (DPSA, 2001; Gartner, 2000; Fang, 2002:2-3; Chatfield, 2009:135; Anni, 2016:06; Haque & Panthrannarakul, 2013:25-26). Implementing e-government in processes of government changes the nature of government – public relations into a technologically based relationship (Kroukamp, 2005), and focus should be on making information more accessible as well as ensuring quality services that are transparent, efficient and responsive to the needs of society (DPSA, 1997). Therefore, e-government greatly impacts on how the public sector conducts its business, interacts within itself, with private sector businesses and with citizens in general as the government's clients (Van Dijk and Croucamp, 2007:60). Since enhancing public sector performance is now the key

goal of most governments with a focus being on delivering services in new, better, and often cheaper ways (ANAO, 2004), innovation in the public sector is thus necessary for the achievement of more targeted, more responsive, more transparent and efficient service delivery.

Over the past decade, there has been heightened awareness of the importance of e-government application in the South African public sector as the country sought ways to address imbalances and inequalities created by the previous regime through improved and responsive service delivery (Naidoo, 2011:33). The Department of Public Services and Administration (DPSA) was therefore vested with the authority to lay policies and guidelines for e-government practice in South Africa and came up with the following e- government goals for the country:

- To improve internal organizational processes of government.
- To provide better information and service delivery
- To increase government transparency in order to reduce corruption
- To reinforce political credibility and accountability
- To promote democratic practices through public participation and consultation.

The above e-governance goals are strongly reflected in the Batho Pele principles of service delivery introduced for implementation by the Department of Public Service and Administration (DPSA) in October 1997.

- Regular consultation with customers
- Increased access to services
- Setting of service standards

- Provision of more and better information about services.
- Increased openness and transparency about services
- Ensuring high courtesy levels
- Remedy for failures and mistakes
- Giving best possible value for money.

These principles laid the foundation for introduction of e-government and e-governance in public sector management. New efforts by the government to implement e-government as a service delivery strategy are already evident in municipalities and government departments such as the Department of Home Affairs (DHA), South African Social Security Agency (SASSA) and South African Revenue Services. However, e-government services in South Africa are often impeded by several issues including inadequate infrastructure, lack of skilled people, language diversity, high levels of illiteracy, digital illiteracy as well as high internet access costs (Lesame, 2005:197-198; Mayaki, 2010 & Wild, 2013).

Policy transformations in the education sector as a public sector department have seen many people being afforded access to education, especially the previously disadvantaged groups, in the past two decades. This has resulted in an influx of potential learners that leads to many people failing to secure places early in public schools for their children during the registration periods, especially grade 1 and grade 8 pupils. Long queues of applicants on the first day of the schooling year have become a common phenomenon in most public schools as a result of the improved access to education (Lesufi, 2016:02). The Department of Education staff and personnel in schools are often overwhelmed with work especially in the registration periods.

Faced with ever-increasing enrolment figures due to this democratisation of education after independence, the Gauteng Department of Education (GDE) has recently come up with an innovative way of managing admissions of grade 1 and 8 students for 2017 academic year in public schools through their online applications system rolled out on 11 April 2016. In a media statement in April 2016, the Member of the Executive Council (MEC) for education in Gauteng, Mr. Lesufi pointed out that this initiative comes with the aim of reducing the huge numbers of applicants / unplaced grade 1 and 8 learners queuing in schools for space at the beginning of the academic year. The focus of this initiative is therefore to improve services to grade 1 and 8 applicants in public schools which accommodate 88% of learners, currently and for which manual processing of admissions has become a mammoth task for administration staff (Lesufi, 2016:01).

However, Pillay, (2012) argues that although e-government has been adopted as a strategy for service delivery in South Africa, e -government projects of the country are still mostly in their infancy stage when viewed against the ANAO model of e- governance and that not all e-government innovations implemented have been successful in achieving the goals for which they were established. Drivers for public sector innovation are in the need for widespread improvements in service performance inclusive of efficiencies, in a bid to increase public value (Moore, 1995) cited in Hartley, (2005:27), and this must be the yardstick for evaluating the effectiveness of any innovation.

While online services are not new in South African public sector, they are relatively new in the Gauteng Department of Education and the researcher argues that this e-government initiative (the online applications) is a positive

move towards service delivery improvement by the GDE, despite the criticism that it faced on its roll out on 19 April 2016, when parents and civic organization groups described it as “unworkable and ineffective[1]. The implementation of the online learner applications system may not be a walk in the park, the initiative may have both opportunities and constraints for both the GDE and other beneficiaries of the policy namely parents, school principals, administration staff, to mention a few. Hence there is need to observe the implementation of the system carefully to check whether or not they make a difference to service delivery in the education sector as well as opportunities and challenges of their implementation before they are deemed useless.

Given this background, this study seeks to assess the efficiency, effectiveness and acceptability of the GDE’s online learner application system as a service improvement innovation as well as to identify the opportunities and challenges of its implementation. More so, the researcher aims to highlight lessons derived from international best practice that can benefit South Africa with regards to e-government application in the management of admissions in public schools. The literature review chapter of this study will focus on this aspect of best practices in a global context.

## 1.2 PROBLEM STATEMENT

The South African Constitution, (1996) emphasizes the need to recognize people’s rights as enshrined in the Bill of Rights. Section 29(1) (a) of the South African Constitution, (1996) stipulates that everyone has a right to basic education. To ensure individuals’ effective exercise of their right to education, the state must consider all reasonable alternatives, taking into consideration equity,

[1]Ndlazi, S. 2016. Parents Lash School Online Admissions. Johannesburg. IOL. Accessed online on at https://www.iol.co.za/lifestyle/family/parenting on 15 April 2016

practicability and the need to redress the past discriminatory laws and practices (Section 29, subsection 2).

The democratization of education in South Africa at independence and its recognition as a basic human right has seen an education sector that is characterized by yearly increases in enrolment figures especially in the public schools. Manual processes of admission are becoming inefficient resulting in many potential learners failing to secure places before the beginning of the academic year (Lesufi, 2016). Long queues of applicants are the order of the day on the first day of the academic year in most public schools and the GDE cannot overlook such a problem any longer (ibid). If this problem is not effectively addressed, most of the potential learners will soon be deprived of this very essential right as they will be forced to stay out of school due to lack of access. New, efficient and effective ways of handling admissions are therefore necessary to curb this problem, hence the introduction of the leaner online applications by the GDE. This is in compliance with Section 195 subsection 1 of the South African Constitution which asserts public administration that is characterized by principles of efficiency, effectiveness, responsiveness to people's needs among other democratic principles.

The Gauteng department of Education (GDE) made an announcement to all parents and guardians of prospective grade 1 and grade 8 learners for 2017 that all applications would be done online[2]. The online admissions would run until midnight on the 1st of June 2016, having commenced on the 11th of April 2016. The MEC for Education, Mr. Lesufi Panyaza emphasized that the admission

[2] See SANEWS, April 17, 2016 : How to apply for a Gauteng government school spot online
See also EYEWITNESS NEWS 15 April, 2016: How to register your Grade 1 and 8 children online. Accessible on https://ewn.co.za/categories/local

period for 2017 will end on 7 September, 2016 “by which date all applicants should be placed”.[3]

On its roll out on 19 April 2016, the GDE learner online application system immediately faced criticism from parents and civic organization groups in Tswane, which is the capital city of South Africa and other areas who described it as an “ineffective unworkable system” (Ndlazi, 2016; Ngwetsana, 2016). In his Diffusion of Innovation Theory (DOI) Rogers, (1962) argues that there are various factors that make innovations to be adopted by potential users and to be sustained for a long period of time. This is also echoed by the Technology Acceptance Model which emphasizes that the acceptance of an innovation is dependent upon the users’ perceptions of the innovation as either useful (effective) and their perception of how easy it is to use; hence some innovations are easily adopted while others may fail.

Research has shown that online services have been successfully adopted and used in some government departments in South Africa while others failed to materialize into sustainable innovations (Pillay, 2012; Naidoo, 2011). However, it is not yet known whether online services have improved on service delivery and whether they have been accepted as an effective innovation in the education sector. Being a new innovation in the Gauteng Department of Education, this study seeks to address the following primary question:

**How efficient and effective is this new online learner application system in ensuring more effective admission processes in the public schools and**

[3] For more information on the online admissions, see Media Statement : Statement on several education related matters by MEC Panyaza Lesufi, 15 January 2016 accessible on www.gde.gov.za
See also Media Statements: Update on the learner application system by MEC Panyaza Lesufi, 19 & 20 April 2016. Accessible on www.gde.gov.za

**how ready are citizens (customers) and other stakeholders to permanently accept it as an effective admission practice?**

The study, therefore, sought to determine whether the GDE online learner applications initiative is efficient and effective in improving service delivery in schools in the Sedibeng West District of Gauteng, and to identify opportunities and challenges of its implementation.

## 1.4 RESEARCH QUESTIONS

This study is based on the following primary question:

> How efficient and effective is the GDE online application system in solving the service delivery issues (learner admission problems) in the Sedibeng West District schools?

Based on the problem stated and the theoretical framework the study aimed at answering the following sub-questions:

i. What are the e-readiness factors that influence the implementation of the GDE online application system in the Sedibeng West District of the Gauteng Province?
ii. Is there capability and willingness by citizens to use the online learner application service offered by the GDE?
iii. To what extent do users of the online application system perceive the initiative as less taxing/ free of effort and better than the system of admissions it is replacing? (perceived ease of use)
iv. Are there any alternative options for use by the digitally challenged, the computer illiterate and those without internet access to apply for their children?

v. What are the opportunities and constraints in the implementation of the online application system and what can be learnt from international best practice with regards to ICT application in service delivery?

## 1.5 RESEARCH OBJECTIVES

Below is the main objective that this study sought to achieve:

To investigate the efficiency and effectiveness of the GDE online application system in solving learner admission problems in the Sedibeng West District schools and the degree to which the system satisfies customer needs.

Based on the research main objective of the study above, the study aims:

i. To identify e-readiness factors which influence the implementation of the GDE online application system in the Sedibeng West District of the Gauteng province.
ii. To assess the capability and willingness of the customers in Sedibeng West District to use the online application system introduced by the GDE
iii. To establish the extent to which users perceive the new application method as useful and free of effort (perceived ease of use)and as being better than the method of application it is replacing (perceived usefulness
iv. To find out if any options are available for the digitally excluded and those without internet access to apply for their children?
v. To identify constraints in the implementation of the GDE online application system and lessons derived from international best practice in ICT application in public service delivery.

## 1.6 RESEARCH HYPOTHESES

The following two hypotheses are presented for this study:

i. The GDE online learner applications system is effective and efficient in improving admission processes in public schools.

ii. There are no challenges in the implementation of the online application system in the Sedibeng West District.

## 1.7 RESEARCH STRATEGY

A mixed methods approach to research was employed, though the research study is predominantly a quantitative study, accomplished through the use of a case study of the Sedibeng West District public schools and education office and parent community. According to Young, (1975), a case study allows exploration and analysis of the life of a social unit where inferences from such a study may be applied to other units from similar backgrounds.

The choice of a case study was justified by the fact that there are a significant number of public schools and education offices in the Gauteng province. Attempting to study the whole lot of them would require a lot of time and resources which were both not available for the researcher. Hence studying implementation of the online system within one district helped provide insight into its efficiency and effectiveness as a service improvement initiative and recommendations could be made for effective public service delivery based on the findings of the study. Since this study was conducted in one district of the province only, its findings may not be generalized to all areas of the province, but may be used as a basis for further research on a wider scale.

## 1.8 STUDY POPULATION

In research, the population refers to the totality of persons, events, organization units, cases with which the specific research problem is concerned (De Vos, 1998:190; Goddard & Melville, 2001:34). It is the focal group from which the researcher will learn something. The initial target population for this study consists of all public schools, education offices and parents/guardians of potential grade 1 and 8 learners in the Sedibeng West District. An estimated sample of 100 respondents was expected, drawn from the different sections of the target population mentioned above. Participants of various age ranges were required in order to establish whether the new system affects positively/ negatively a particular age group of applicants or all applicants regardless of age.

## 1.9 SAMPLING PROCEDURES

`De Vos, (1998:190) defines a sample as a portion of the elements in a study population that is studied in an effort to understand the population from which it was taken. Firstly, random samples of catchment areas for the Sedibeng West District were drawn from the Department of Education (DOE) administrative database. The researcher then employed the use of purposive sampling to come up with a representative sample on which to base the study. Purposive sampling enables the researcher to conveniently choose groups of individuals who are likely to be knowledgeable and informative about the phenomenon of interest (McMillan & Schumacher, 2006:75). Therefore, through this sampling method, parents of prospective Grade 1 and 8 pupils for 2017 were targeted as information rich participants as they are the ones affected by the new system of applications. Snowball sampling was further involved, whereby more participants were recruited through contacts of existing participants as they were likely to

have knowledge of other people who met the criteria set for recruitment in this study. For the parent population to be fairly represented, the researcher purposefully identified both computer literate and illiterate parents who are potential users of the online application system. Other key participants to be purposefully selected were school principals, senior education office managers from the district education office and data capturing staff in schools and at the district education office who are involved mainly in the processing of applications in the enrolment processes of students. Four schools were also purposefully sampled so as to come up with schools that fairly represent the urban and township parents and guardians.

### 1.10 SAMPLE SIZE

The proposed sample consisted of a total of **100** participants as described below:

i. Primary School Principals N= 2

ii. Secondary School Principals N = 2

iii. Prospective grade 1 parents / guardians N = 44

iv. Prospective grade 8 parents / guardians N = 44

v. Administration staff of selected schools N = 04

vi. Sedibeng West District Education Office senior management N = 02

vii. Sedibeng West District administrative staff N = 02 (**Total Sample size: N = 100)**

## 1.11 SIGNIFICANCE OF STUDY

Being a new innovation not yet researched on, this study is significant in that it will help assess the efficiency and effectiveness of the new online application system in the admission processes of public schools. The study is also important in that promotes a paradigm shift in public sector management from traditional to modern customer-centric approach to service delivery. It will also contribute to existing knowledge in the utility of e-government innovations. It is also intended to improve public service delivery through promotion of strategic e-government innovation. Since there is limited literature on e-government innovation in the South African context, the study aims to fill in that gap in literature. The study is also expected to enlighten policy makers and implementers on the requirements for effective e-government projects, to adopt best practices and recommendations from successful e-government projects of other departments and states.

## 1.12 DELIMITATION OF STUDY

The study was conducted in two public primary schools and two public secondary schools in the Sedibeng West District due to limitations of time and resources to the researcher to carry out the study on a wider scale. Private schools were not involved as they are not affected by the online learner application system. Only the parents/guardians of potential grade 1 and 8 learners for 2017 were considered as respondents since they are targeted by the new admissions method/ system.

## 1.13 LIMITATIONS OF THE STUDY

Since the researcher was given limited time to conduct the study in the GDE institutions, it was not possible to conduct one-on-one interviews with each of the identified interview respondents as originally planned in the proposal. Instead, in

each school the identified respondents were interviewed at the same time in the form of group interviews.

The unavailability of time and other essential resources limited the researcher to conducting study in one district only. Hence the researcher did not generalize the findings of the study to represent the scenarios in the whole province but rather suggested that they be used as a basis for wider research in future.

Most of the parents in the areas where the study was conducted cannot converse fluently in English. On the other hand, the researcher being a non-South African does not fluently speak the Sesotho language commonly used in the district. This could have an effect on the choice of respondents if only those who can speak English fluently were chosen as this would not give a true representation of the parent community. The researcher therefore sought the help of a translator to translate the English Survey questionnaire to Sesotho so as to accommodate those who understand Sesotho better. Use was also made of fieldworkers who are fluent in both Sesotho and English to distribute the questionnaires and seek the informed consent of the parents.

## 1.14 CHAPTER LAYOUT

Chapter 1: The Problem and Its Setting

Chapter 2: Contextualising Public Service Innovation, E-government and E-services in the Public Service Delivery Debate.

Chapter 3: E-government in the South African Context.

Chapter 4: Research Methodology and Design.

Chapter 5: GDE Online Applications: Data Presentation, Interpretation and Discussion of Findings.

Chapter 6: Summary, Conclusion and Recommendations.

# CHAPTER 2: CONTEXTUALISING PUBLIC SERVICE INNOVATION, E-GOVERNMENT AND E-SERVICES IN THE PUBLIC SERVICE DELIVERY DEBATE.

## 2.1 INTRODUCTION

There is a plethora of evidence in literature on the use of e-government innovations in the delivery of services by governments of both developed and developing states (ANAO, 2004; Ndou, 2004; Naz, 2009; Chatfield, 2009; ADA, 2011; Esmat Ara, 2015; Anni, 2016; Heeks, 2004). With the world becoming a global village that is technologically connected and driven, state governments, globally, are becoming more aware of the value of e-government innovation in improving service delivery and ultimately achieving good governance. The road to effective service delivery is paved through improved processes plus more access to government information and services by the citizens (Quina, 2015). E-government innovation goes far in achieving these goals for the public sector.

For some time in the history of research, the public sector, especially in the African context was side-lined in scholarly investigations on the effects and outcomes of information communication technologies (ICT) in service delivery due to the sector's tendency to lag behind in as far as adoption of technology is concerned (Ndou, 2004:01). However, most governments in developed and developing countries have recently begun to realise the importance of embracing e-government implementation in service delivery to their citizens (Gartner, 2000; Farelo & Morris, 2006; Matavire et al, 2010). E-government has now emerged as the means by which the South African government, through its public sector organisations, is participating in the new and improved arena for service delivery. The way business is performed by government is being greatly revolutionised by

the explosion of digital connectivity and widespread improvements in utilization of information communication technology (Ndou, 2004:1; Fang, 2002). Quiet often people may have in mind the following questions:

i. What is e-government and does it have any benefits to government service delivery?
ii. Is the use of e-government at all improving the efficiency and effectiveness of public sector organisations, simplifying and speeding service delivery to communities?

Naz, (2009: 190) argues that e-government is the "application of ICTs to government processes to bring about simple, moral, accountable, responsive and transparent (SMART) governance". This is echoed by Haque and Panthrannarakul, (2013) who also asserts that ICT use transforms the traditional government by making it more responsive, transparent, accountable, interactive and accessible. As a result, the Department of Public Service and Administration (DPSA) has of late emphasised the need for government departments to resort to the use of ICTs in delivering services to citizens, business and other arms of government in South Africa.

There is evidence of transformational impacts of e-government projects in different country models, for instance Japan National Tax Agency's e-tax initiative (Chatfield, 2009), Australian e-governance strategy (ANAO, 2004), not forgetting our very own South African Revenue Services e-filing system among other e-government projects implemented so far in different government departments (Pillay, 2012). Jones and Hackney, (2007:145) thus posit that in the near future, e-government will have transformed the manner in which public services are

delivered as well as the interactive relationships of government, community and businesses.

However, e-government adoption and application should not be viewed as a walk in the park. Quite a number of challenges have impeded the successful implementation of e-government in some developed and developing countries alike (Ndou, 2004; Anni, 2016). Internal and external buy-in to the e- government projects as well as commitment of the policy makers, management and public servants are essential pre-requisites for successful implementation (Chatfield, 2009:135). In most countries, particularly developing ones, human capital and infrastructure limitations have been major impediments in the ability of governments to use ICT in service delivery (Haque & Panthrannarakul, (2013:33). Therefore, in this chapter in-depth review will be done of literature on e-government opportunities, prospects and challenges in order to shed light on the possible benefits and challenges of the newly introduced GDE online applications system as an e-government initiative aimed at service delivery improvement. The study reviews some of the literature related to e-government solutions in the public sector and how they have influenced the delivery of public services globally, regionally and locally. Since e-government innovation literature in the South African context is a bit limited, literature on international e-service delivery innovation and solutions will be consulted in order to identify lessons that can be learnt from international best practices.

## 2.2 EXPLANATION OF KEY CONCEPTS

For readers to understand the key concepts / terms used throughout this paper, it is imperative that they are explained to clarify the context in which they are used.

Below are brief explanations of the most common concepts that will be used in this paper:

### 2.2.1 Digital government, e-government and e-services

The terms digital government, electronic government (e-Government) and electronic services (e-services) are used commonly to embody the use of information and communication technologies in public sector organizations. Since the terms are closely related, they are often used interchangeably, which often causes confusion.

#### *2.2.1.1 DIGITAL GOVERNMENT*

• Digital government refers to the “umbrella term that comprises all uses of information and telecommunication technologies in the public sector” (Garson 2006 18). This implies all non-traditional means of passing information to the citizens both on the internet and also without the use of the internet. This may include use of SMS system, the telephone system, electronic mail among other electronic means of passing information between service providers and service users.

#### *2.2.1.2 E-GOVERNMENT*

E-Government or (electronic government) is an aspect of digital government which refers to how government provides services to its stakeholders through ICTs, predominantly over the Internet. Many academics and researchers have attempted to provide working definitions that would make the concept of e-government to be understandable in different contexts. Hence, there are various definitions of e-government which usually suit the contexts in which they used by different writers. The table below presents a collection of e-government definitions provided by various writers in literature:

**Table 2.1: Selected e-government definitions from literature**

| | |
|---|---|
| 1 | The use of any and all forms of ICT by governments and their agents to enhance operations, the delivery of public information and services, citizen engagement and public participation, and the very process of governance (Curtin et al., 2003). |
| 2 | A way to strengthen the flow of information to citizens, and to improve citizen access to government programmes and services. There is also an assumption that the resulting transformation will make government more efficient, more responsive, more accountable, and perhaps even more democratic (Gibbons, 2004). |
| 3 | The use of information and information technologies in government settings (Gil-Garcia & Martinez-Moyano, 2007:266) |
| 4 | The use of ICTs to improve the activities of public sector organisations (Heeks, 2004). |
| 5 | It is about facilitating the life of citizens and businesses by increasing the efficiency, quality and user-friendliness of government, as well as improving governance (Liikanen, 2003:84) |
| 6 | It refers to government's use of technology, particularly Web-based Internet applications, to enhance the access to and delivery of government information and service to citizens, business partners, employees, other agencies, and government entities (McClure, 2001). |
| 8 | Utilising the Internet and the World Wide Web for delivering government information and services to citizens (UN, 2002). |

A closer look at the above definitions shows their convergence on the use of technology for communication and improvement of service delivery by a government to its citizens. Thus, a common understanding of e-government lies in the point that information and communication technologies are used to improve activities and services of the public sector organisations. The definitions above do

justify the implementation of the Gauteng Department of Education (GDE) online application system in South Africa as an innovative attempt by the GDE to use internet, the web, computer technology and mobile technology to deliver government information and improved educational services directly to the public.

Dawes, (2002:1) however argues against the assumption by various people and sometimes academics, that e-government is only about delivering government services via the internet as limiting the span of e-government concept. The concept involves all electronic means by which information and services may be made accessible to government and to its stakeholders namely the citizens, employees, businesses and other government agencies. E-government can therefore be defined as the use of information and communication technologies to present citizens and businesses with the opportunity to interact and do business with government through the use of different electronic media such as telephone touch pad, fax, smart cards, self-service kiosks, e-mail via the Internet, (Almarabeh and AbuAli, 2010: 30). Since e-government involves the use of Information Communication Technologies (ICTs) by government, it is important to note that ICT encompasses areas such as telephony, broadcast media, and all types of audio and video processing and communication of information[4]. E-government is therefore explained as the ability to obtain and provide services through non-traditional electronic ways, including the internet, thus enabling fast and easy access to government information and services anywhere, anytime on equal basis for the continuous optimization of service delivery (DPSA, 2001; Gartner, 2000; Fang, 2002; Chatfield, 2009; Anni, 2016; Haque &

[4] See the Free online dictionary for computing
http://foldoc.org/Information+and+Communication+Technology

Panthrannarakul, 2013). Furthermore, it is also argued that e-government is the use of information technology to sustain government operations, engage citizens, and provide government services, thus improving and enhancing the efficiency and effectiveness of service delivery in the public sector (Dawes, 2002: 1; Dawes et al, 2003). While all these definitions are simply stated, they are actually quite broad. They incorporate four key dimensions of e-government, which reflect the functions of government itself:

• E-management - the use of information technology in the improvement of government management, from reformation of business processes to maintenance of electronic records, as well as improving the flow and integration of information

• E-services -- the electronic release of government information, programs, and services often over the Internet and through other non - traditional electronic ways. The GDE online application system, which is the focus of this study, is an example of how services can be offered online (e-service) to the citizens by government service delivery agencies.

• E-democracy -- the use of electronic communications to enhance citizens' contribution in the public decision-making processes of government.

It is important to note that e-management, mostly invisible to the public, is essential to every other aspect / dimension of e-government mentioned above. Without paying attention to e-management we cannot have the successful e-services, public participation / engagement, and high quality, low cost operations that e-government promise (Dawes, 2002). In this paper therefore, focus is on e-government, which is described in the context of this study as the use of

information technology to provide government services and support through online and electronic management and delivery of public service for the benefit of both government and service users.

#### *2.2.1.3 E-SERVICES*

E-service refers to a situation when a government service user interacts with a government service delivery agency through a web based interface of a public information system (Persson & Goldkuhl, 2005: 7). Through e-service, citizens are allowed to search for or provide information to government agency in a way that will enable the agency to deliver services to them over the internet. Sjostom & Goldkuhl's communicative model below has been adapted to conceptualise the e- service framework:

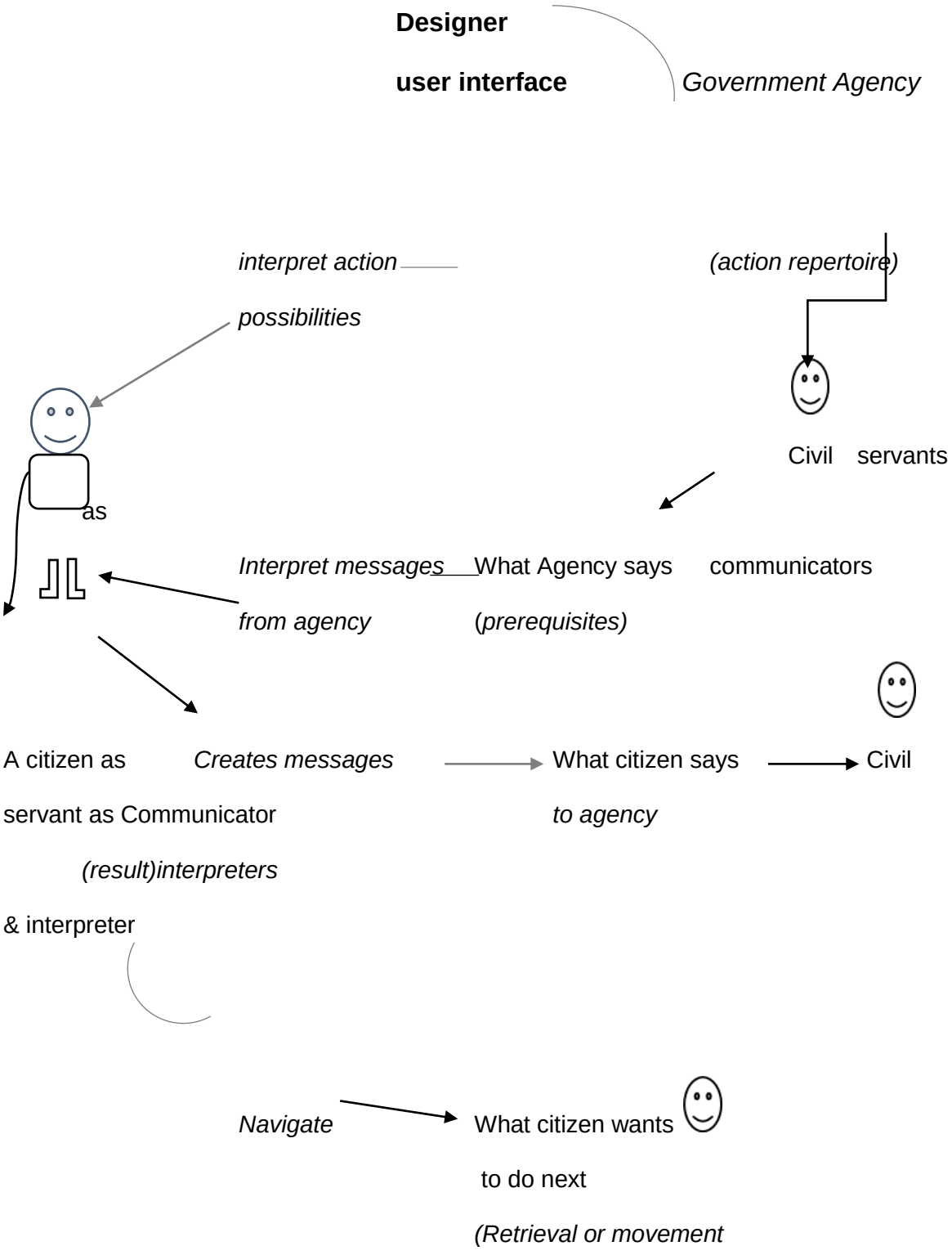


**Figure 1 A communicative perspective on user interfaces**

*Adapted to public e-services based on Sjöström & Goldkuhl, (2004)*

### 2.2.2 E-READINESS

Just as there are various definitions to e-government, so are there various definitions of e-Readiness. The Economic Intelligence Unit (EIU, 2009:4) defines e-Readiness as a means of determining the quality of a country's ICT infrastructure and the willingness of its citizens, businesses and government to utilise information communication technologies to their advantage. Dada, (2006:1) cited in Davids, (2011:37) views e-readiness as, "the measure of the degree to which a country, nation or economy may be ready for e-government and to reap the benefits of information communication technologies". In other words, e- readiness is the starting point to the implementation of e-Government, which ultimately leads to e-governance achievement. Thus, the World Bank, (2002) asserts that a government needs to be e-ready in respect of infrastructure and ICT accessibility to citizens thereby emphasizing e-readiness as an important dimension of e-government. Hence in trying to understand the e-readiness concept, this study seeks to establish the extent to which the Gauteng Department of education is e-ready especially in the Sedibeng West district, in order to be able to offer effective e-services.

## 2.3 STAGE MODELS OF E-GOVERNMENT DEVELOPMENT:

Information communication technology (ICT) use has been one of the core issues in the public administration reform debate over the past decade globally (Persson & Goldkuhl, 2005:1). E-government is of special interest to the United Nations Public Administration Network (UNPAN) with their decision that using e-government in Public Administration is an important way of improving the development and administration of countries in the world (UNIPAN, 2008). Hence, in many countries there has been a rapid growth in the availability of

government services on the internet as governments go through different stages of e-government implementation in public service delivery.

E-government researchers generally agree that e-government development in organisations moves through stages till it reaches maturity (ANAO, 2000; Persson & Goldkuhl, 2005; Hiller and Belanger, 2001). Therefore, models are often used to guide, categorise and evaluate progress in e-government implementation in a bid to enlighten agency leaders on what possible services to offer the public at different implementation stages. Four common models listed below are often used for the implementation of e-government by government agencies[5]:

i. ANAO (Australian National Auditing Office) model [6]
ii. SAFAD (Swedish Agency for Administrative Development) Model[7]
iii. Layne & Lee Model[8]
iv. Hiller & Bélanger Model

However, these are not the only stage models; newer models are being created but they are mainly based on these common models. Though serving various purposes, in general, the four commonly used stage models have common basic features in that they divide e-government implementation /development into several stages, from simple information services to more refined one stop

[5] See Person, A. & Goldkuhl, G. 2005. .Stage models for public e-services- investigating conceptual foundations. *Paper accepted to the 2nd Scandinavian Workshop on e-Government, Copenhagen, February 14-15 2005.* Available online www.vits.org/publikationer/dokument/492.pdf
[6] Goldkuhl & Persson, "From e-ladder to e-diamond – re-conceptualising models for public e-services", 2006, p3
[7] See Person, A. & Goldkuhl, G. 2005. .Stage models for public e-services- investigating conceptual foundations. *Paper accepted to the 2nd Scandinavian Workshop on e-Government, Copenhagen, February 14-15 2005.* Available online www.vits.org/publikationer/dokument/492.pdf
[8] [8] See Layne, K, Lee, Jungwoo (2001), Developing Fully Functional e-Government: A four-stage model, Government information quarterly 18(2): 122-136

gateway to government services (Person & Goldkuhl, 2005). A discussion of each of the four stage models above follows below.

### 2.3.1 ANAO MODEL

Developed by the Australian National Auditing Office in the year 2000, the model categorises government agencies' electronic service delivery via the internet. Delivery of online services is divided into four stages which should be implemented in an incremental manner. The model pivots around emerging e-services and their ultimate development and growth. According to ANAO, (2000), this model forms a basis or framework for auditing e-government services and as a guide to help agencies in finding the types of services to deliver online.

**Stage 1: Publishing.**

This stage involves sharing of information about the agency over the web. It is a stage when an agency creates a visibility online to the general public and static information about the agency is provided. Information is made available to the general public through a one–way communication, which enables users to search for information but not allowing them to provide information back to the agency. Services include provision of agency contact details, physical addresses, downloadable and readable materials. Services are open to all and security of information is not emphasised in this basic stage of e-government development as mostly static government information is delivered to citizens at this stage.

**Stage 2: Interaction Stage**

This stage creates limited possibility for interaction between the user and the agency. Users are allowed limited access to agency databases as well as capabilities for expanded searching and filtering of information. For instance, at

this stage, users can make calculations relating to government debts or government subsidies online. However, there is no possibility for financial transactions (payments) at this stage.

**Stage 3: Transaction of secure information**

The need for secure identification of the individual interaction with government is required at this stage of e-government development. Access to data is restricted to someone who supplies his / her personal information in order to elicit government services. Usernames and passwords are required to protect individual information from being accessed by anyone other than the user and the agency. Hence, creating services under this stage requires addressing security, privacy and financial transactions (Pillay, 2012; Goldkuhl & Persson, 2006). Examples of services in this stage include online lodging of individual tax returns and online application for admission into public schools among others that require user authentication.

**Stage 4: Sharing information with other agencies**

Sharing of information about a user is enabled between different agencies that serve the interest of the user. A change of an individual's address can be updated on multiple databases and is consistently updated across all agencies that serve the individual's interest. Like in the third stage, security is a concern in offering such services, hence, user identification is a strict requirement to be able to access information and perform any transaction. In other words, this stage enables the use of ICT to foster G2G services.

### 2.3.2 SAFAD MODEL

It is a model presented by the Swedish Agency for Administrative Development (SAFAD) and relates well with the ANAO model. The model is assumes that technology is closely interwoven with service levels in the emerging e-government services (Persson & Goldkuhl, 2005:3). Like the ANAO model, e-government is also seen to go through four stages illustrated in the diagram below:

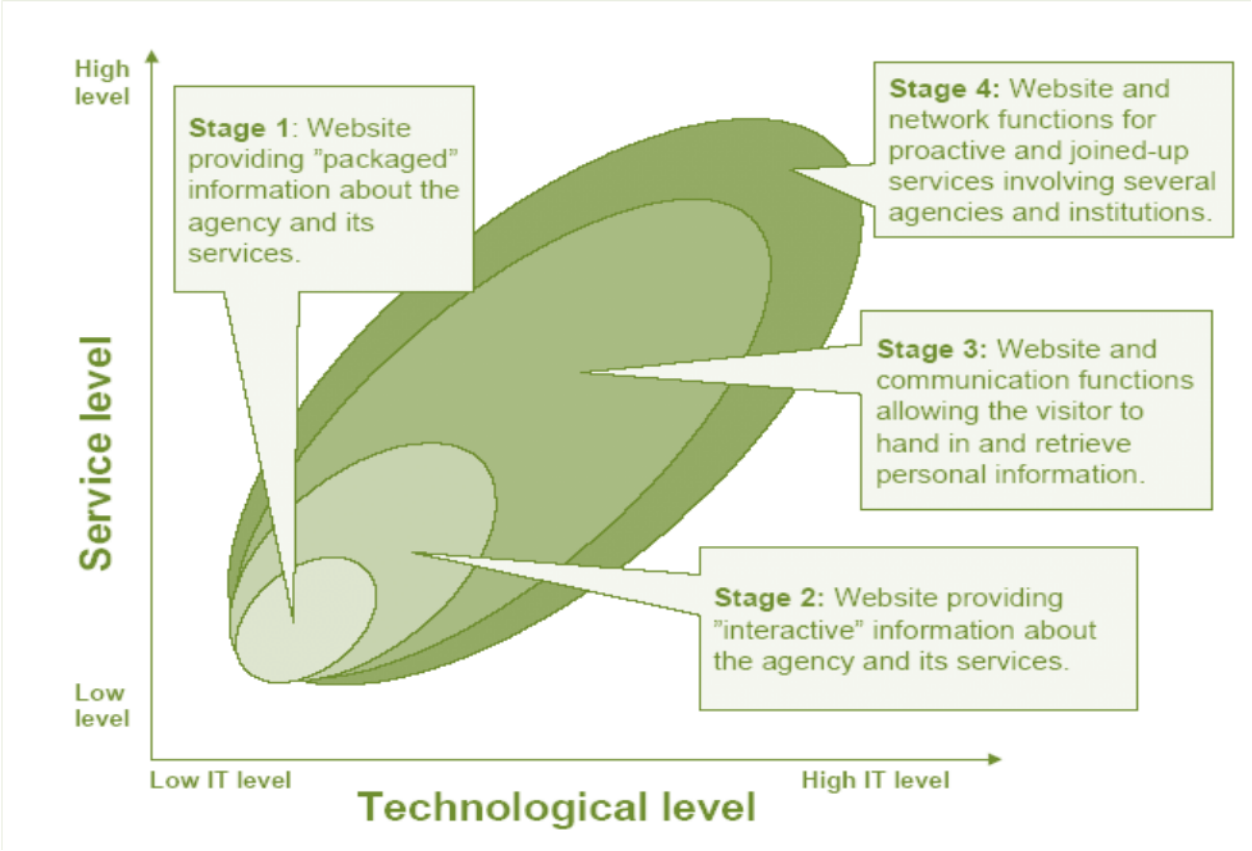


**Figure 2.1 SAFAD stage model of e-government development**

*Source: Statskontoret, (2000)*

**Stage 1: Information**

This stage focuses on giving out static information about the agency. Information is packaged for citizens with little to no opportunity to interact with the agency as

information communication is mainly one-way from agency to user. Information presented includes the mission, vision and core values of the agency as well as the agency's mandate to the people. Contact information of the organization is provided and interaction is mainly enquiry based.

**Stage 2: Interaction stage**

This stage provides interactive information based on basic interaction with the website of an agency. Services include database searches, downloading of forms relate to the agency's services as well as subscription to the agency's services. However, at this stage downloadable forms can only be printed not completed online and their submission to the agency still follows manual process of physical submission at the agency. Enquiries at this stage are enabled via e-mail.

**Stage 3: Transaction stage**

This stage involves picking up of and submitting personal information required for one to access an agency's services. Such services are provided to users who have provided secure identification with services ranging from updating of personal information, submitting applications online and more advanced transactions like e-filing of tax returns as well as e-commerce. Authentication of access to information is emphasised through the use of passwords and usernames. Hence, services at this stage are password protected.

**Stage 4: Integration**

Information about a user is integrated and shared between different agencies. Services from the different agencies are integrated and can be accessed by the user through a one stop portal or gateway to government services. The Batho

Pele Gateway Programme of South Africa is one such initiative with the intention of placing a one-stop portal from which citizens can access links to all the different.

### 2.3.3 LAYNE & LEE MODEL

This model is derived from observations on e-government in the USA. It initiates from research and experiences from a federal government structure but can be adapted to other structures of government. Layne and Lee argue that the progress of government agencies is “a natural progress in which the agency evolves because of and in response to functionality needs and customer expectations” (Persson & Goldkuhl, 2005: 4). Their e-government progress also evolves through four stages.

**Stage 1: Catalogue Stage**

This is when an agency establishes an online presence where information about the agency in form of its services, business hours and publications is presented to the public on a company website. This is necessitated by the “pressure from citizens’ and business expectations’ (Persson & Goldkuhl, 2005:4). Web design for online visibility is thus the focus of this e-government stage. Information and documents of a general nature are thus published for public access. Hence, it can be regarded as the information stage of e-government evolution.

**Stage 2: Transaction**

Shift of focus in this stage is towards integrating the agency’s internal systems with the website. This stage offers limited interaction between the clients and agency with personal information used in transaction based services like renewal of licenses, and payment of fines. Expected end result of this stage is minimized

physical interaction between agency staff and clients through a web interface that allows transactions between the two without physically meeting Goldkuhl & Persson, (2006) but through direct online communication with the back-end processes of the agency (Pillay, 2012). The GDE online application system in this study is at this stage of evolution where applicants no longer need to physically queue at schools to submit applications for space but rather interact over a web-based connection with the Department of Education in order for their applications to be processed. Hence the transaction stage integrates the online system with the agency's front and back office operations.

**Stage 3: Vertical integration**

This stage integrates the different levels of government within the same functional area. Layne and Lee (2000) provide an example in the amalgamation of local level business license applications with the national government level to obtain employee ID numbers. This allows sharing of database information with higher level in order to process users' information. In the case of the GDE online application system, applicants' information is shared on a database by local level front office operations of public schools and higher level provincial education office to process applicants' information.

**Stage 4: Horizontal Integration**

This stage involves handling information systems across different agencies with a common relation to users. This demands effective data management and advanced information management systems that enable consistency of user information across multiple databases, thus may be regarded as the highest stage of e-government development within government.

### 2.3.4 HILLER & BELANGER MODEL

This is the only model out of the four that adds a fifth stage involving political participation. Hiller & Belanger (2001) argue that the highest development is reached when agencies make provision for e-democracy through political participation of government service users online.

**Table 2.2: Hiller & Belanger, Stage Model of E-government**

| | STAGES OF E-GOVERNMENT | | | | |
|---|---|---|---|---|---|
| | Stage 1 | Stage 2 | Stage 3 | Stage 4 | Stage 5 |
| Type of government | Information | Two-way communication | Transaction | Integration | Political participation |
| Government to Individual — Services | Description of medical benefits | Request and receive individual benefit information | Pay taxes online | All services and entitlements | N/A |
| Government to Individual — Political | Dates of elections | Receive election forms | Receive election funds and disbursements | Register and vote. Federal, state and local (file) | Voting online |
| Government to Business — Citizen | Regulations online | SEC filings | Pay taxes online Receive program funds (SBA, etc.) Agricultural allotments | All regulatory information on one site | Filing comments online |
| Government to Business — Marketplace | Posting Request for Proposals (RFP's) | Request clarifications or specs | Online vouchers and payments | Marketplace for vendors | N/A |
| Government to Employees | Pay dates, holiday information | Requests for employment benefit statements | Electronic paychecks | One-stop job, grade, vacation time, retirement information, etc. | N/A |
| Government to Government | Agency filing requirements | Requests from local governments | Electronic funds transfers | | N/A |

**Stage 1: Information**

It is the most basic form of e-government according to the proponents of the model. It involves simple posting of information on the agency's website. This includes general information about products, services and information directed to the public and businesses by the agency. The challenge of this stage according to Hiller & Belanger is to regularly update the website to ensure its accuracy at all

times. There is no much interaction with the user apart from being an information outlet (Persson & Goldkuhl, 2005: 6).

**Stage 2: Two-way Communication.**

At this stage services are offered that allow clients interactions with agency staff in simple requests. Hiller & Belanger argue that e-mail services are provided by the agency to respond to clients' request for information. Examples of information that may be communicated via e-mail include requests for statements, information on identity document application procedures etc. it also includes access to downloadable and printable forms for specific services. However, no advanced transactions like submission of applications or tax filing are handled at this stage.

**Stage 3: Transactions**

This stage creates possibility for interacting and making different advanced transactions completely online. Hiller & Belanger argue that this is the most sophisticated level of e-government commonly available in most agencies. In this stage to a larger extent, personnel (Public servants) are often replaced by the possibility of self-service by the clients (Persson & Goldkuhl, 2005). Services include online payment of taxes and fines, submission and checking of applications, updating personal information among other electronic services. Thus agency-client physical contact and queuing for services at government offices is greatly reduced.

### Stage 4: Integration

Services from different government departments are integrated through a single portal that allows access to various government services at via entry point to government. However, this calls for effective integration of back office systems across government agencies. If properly handled, integrating back-office systems and online services is envisaged to save time and resources for the government agencies and the clients involved (Persson & Goldkuhl, 2005).

### Stage 5: Political Participation

Focus of this stage is provision for e-democracy. Hiller and Belanger (2001) argue that this stage though slightly similar to the two-way communication in their second stage, this stage has a political dimension that allows freedom of expression. Unlike the two-way communication stage which allows open access to all, the political participation stage has consideration of privacy and security of those interacting at the platform. Services at this stage include online voting, online comments and complaints about services. This is often enabled through online pages like an organisation's Face book page where issues may be discussed without anyone having fear of victimisation

## A COMPARATIVE DISCUSSION OF THE STAGE MODELS OF E-GOVERNMENT

Common to all the four models is the basic information provision stages. All four models agree that e-government development should be taken in an incremental manner, starting with creating an online presence of the organization and providing basic information of the organization to the general public. Without creating an online presence first, it may not be possible for higher level services

to be delivered online. The first two stages of the ANAO, SAFAD and Hiller & Belanger models consider increasing interaction of agency and clients in a manner that does not require emphasis on security and privacy through user identification. This is to enable clients to be more familiar with the website and its information services before advanced transactions can be managed online. Their second stage develops the services a bit by enabling limited user interaction with the agency in a way that makes the client and the agent to better understand each other. Transaction related services can only be offered in the third stage when an interactive relationship has been established between the government and clients (Persson & Goldkuhl, 2005). However, according to Layne and Lee model, once online presence has been established higher level services that enable transactions to be completely handled online between the agency back-office and clients can immediately be introduced.

All the four models share a common focus on the need to integrate all information systems of government agencies in order to enable a one-stop gateway to different government services. According to Persson & Goldkuhl, 2005, focus of all the models is on the realization of a one-stop government as the highest form of e-government development for any government. A one-stop government is likely to be built through putting all services at one point of entry, based on the user needs (ibid).

The difference in stage development in the above models also has a bearing on the different levels of e-government development on agencies that adopt the different models. State governments and their various agencies may differ on the level of e-government development stages they fall in. Those who adapt the

Layne & Lee model may be seen to be progressing faster in their e-government development while those who adopt the other three may have a rather slow pace in e-government implementation. Persson and Goldkuhl, 2005: 9) are of the belief that differing functionalities of different agencies are reasons to explain the differences in e-government development stages in different departments of the same state government. However, depending on how properly the models are managed and implemented as well as the state of supportive resources available, all the models may lead government agencies towards either successful or unsuccessful e-government projects that will have influence on the agencies' service delivery to the citizens.

## 2.4 THEORETICAL FRAMEWORK FOR E-GOVERNMENT ADOPTION

Though they have some limitations, the TAM Model and the Diffusion of Innovation theories have been widely used in assessing the adoption of e-government projects and they will be used in this study to assess the GDE online application system. A brief discussion of the two models follows.

### 2.4.1 THE TECHNOLOGY ACCEPTANCE MODEL.

Developed by Fred Davis, (1989), the TAM model is an information systems theory which shows how the users go about accepting and using a technology. It proposes that certain factors will determine if a user will accept and use a technology again once it has been presented to them. These factors are:

i. Perceived usefulness (PU) – the extent to which the user believes that using a system enhances his/her performance and satisfies his/ her needs determine if they will accept and use it again.

ii. Perceived ease of use (PEOU) – this is the degree to which the user believes that using a certain system would be less taxing/ free of effort.

The behavioural intention (BI) of the person to use a system is determined by the benefits they believe the system has for their performance (PU) and how easy/difficult they think the system is to use to perform a task (PEOU). These two factors are controlled / affected by variables like levels of training and system design. PU and PEOU guide the behavioural intention of users to use the system while their BI leads to actual use (acceptance). These two factors are applicable to both citizens and government officials as users of the system. Officials should feel their productivity and efficiency improved by the technological innovation while citizens should feel that the innovation is responsive to their needs and bring better advantages than any system that it is replacing. The TAM has direct relationship with the acceptance or non-acceptance of e-government and is therefore often used in evaluating e-government implementations by both developed and developing countries.

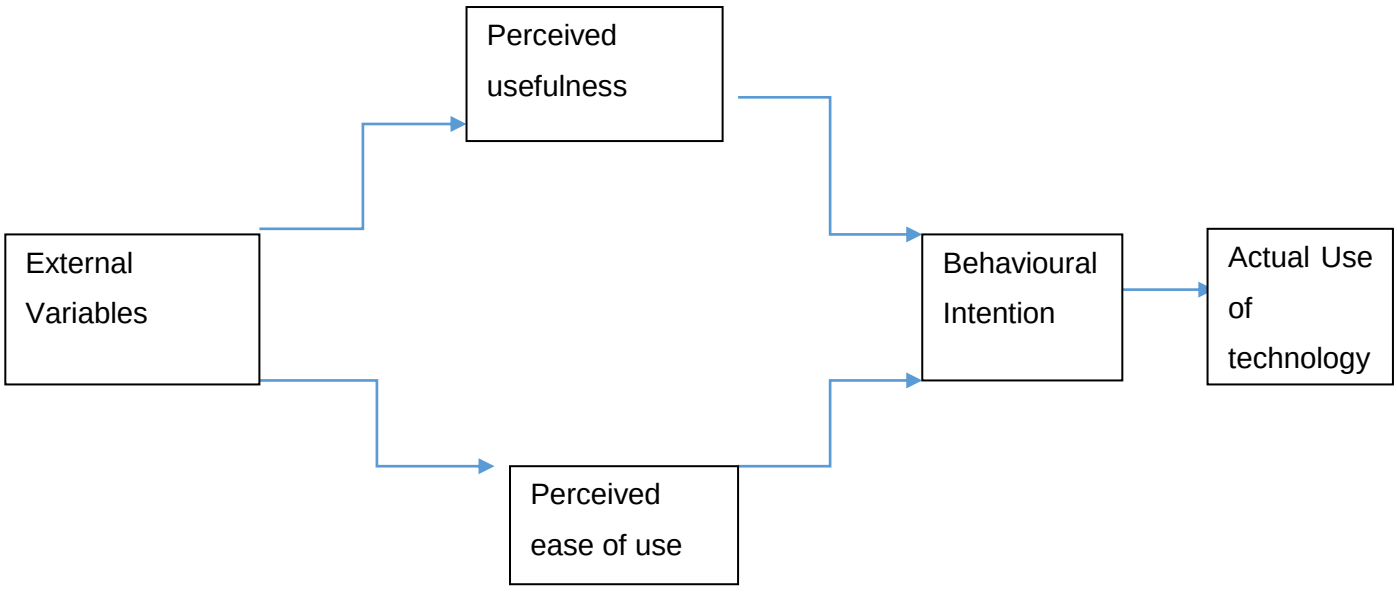

**Figure 2.3: The Technology Acceptance Model. Source: Davis (1989)**

The main criticism of the theory is that the intention to, and the actual use do not strongly link with each other. It is further argued that intention to use a system does not necessarily mean a user will actually use as time gap may bring new opportunities and feelings.

### 2.4.2 THE DIFFUSION OF INNOVATION (DOI) THEORY

Developed by Everett Rogers in 1962, the Diffusion of Innovation Theory seeks to explain how, why and at what rate new ideas and technology spread through social system over time. Rogers argues that innovation is communicated through channels via the process of diffusion. Innovation diffusion is believed to be influenced by four main elements namely:

i. The innovation itself
ii. Communication channel through which the innovation is diffused.
iii. Time
iv. A social system (Rogers, 1962)

Rogers, (1962) believes that the process of innovation is strongly determined by human capital and for the innovation to be continued it has to be widely adopted. There are four categories in which adopters of innovation fall as illustrated in the diagram below:

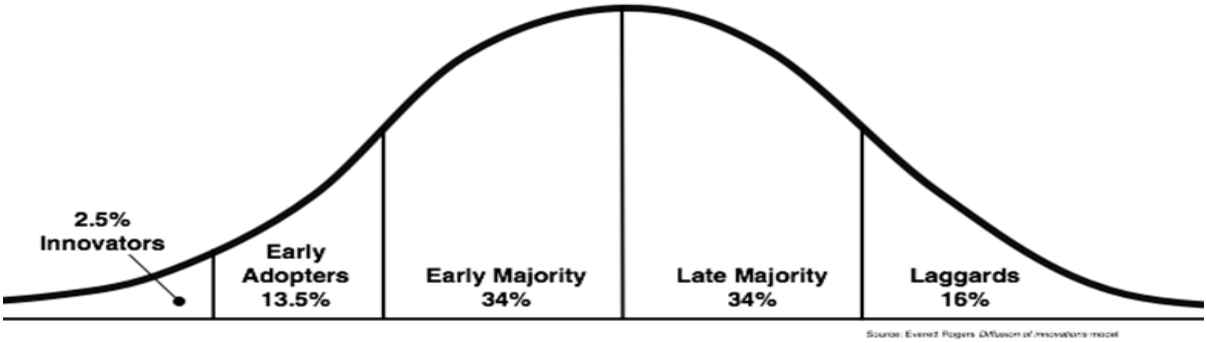


**Figure 2.4: The Diffusion of innovation Model.** ***Source: Rogers, (1962)***

It is important to note that people do not accept and adopt innovations at the same time. While some may be quick to adopt, others take long to be convinced to accept new initiatives, depending on the perception that they have of the innovation. Hence Rogers, (1962) argues that the manifestation and sustainability of innovation vary subject to the nature of its adopters and how they perceive the innovation. The author further asserts that adoption of the innovation by potential adopters is influenced by the following factors:

i. Relative advantage – the degree to which the innovation is perceived as being better than the idea, programme or practice it is replacing.
ii. Compatibility – how compatible/consistent the innovation is with the values, norms and needs of the expected adopters.
iii. Complexity – how difficult the innovation is to understand and implement. Non-complex innovations are more widely accepted than complex ones.
iv. Triability – how possible the innovation is to be tested before full commitment to its adoption
v. Observability – what is the extent to which the innovation is capable of providing tangible results?

Rogers believes that innovation is a five step process of knowledge/awareness, persuasion, decision, implementation and confirmation. Any organization seeking to start any innovations needs to follow these steps if the innovations are to be successful.

### 2.4.3 THE E-GOVERNMENT ROADMAP IN THE DEVELOPING WORLD

Developed by the Pacific Council on International Policy, the Roadmap for E-government in the Developing World seeks to leverage e-government lessons from the developing world in order to increase chances of successful e-government projects[9]. The Roadmap presents 10 questions that provide indicators to guide e-government implementation in the public sector. Practitioners globally believe that answering the ten questions is crucial to successful conception, planning, managing and measuring e-government implementation. Below are the ten questions that the Pacific Council's Roadmap Working Group, (2002) suggests government officials should ask themselves before embarking on the e-government path.

i. *Why are we pursuing e-government?*
ii. *Do we have a clear vision and priorities for e-government?*
iii. *What kind of e-government are we ready for?*
iv. *Is there enough political will to lead the e-government effort?*
v. *Are we selecting e-government projects in the best way?*
vi. *How should we plan and manage e-government projects?*
vii. *How will we overcome resistance from within the government?*

[9] The Working Group on E-Government in the Developing World, "Roadmap for E-government in the Developing World, 10 Questions E-Government Leaders Should Ask Themselves", April 2002. Pacific Council on International Policy. Accessible online www.itu.int>net>egov>pacifc_council

viii. *How will we measure and communicate progress and know if we are failing?*

ix. *What should our relationship be with the private sector?*

x. *How can e-government improve citizen participation in public affairs?*

Implementation of e-government in both developing and developed countries needs to measure up to the Roadmap indicators if it is to be successful. The roadmap can be used to evaluate e-government implementations and the extent to which they have been successfully carried out, hence, in any e-government planning, government officials responsible for e-government planning should take note of the ten questions as guidelines for effective e-government projects.

Together with the TAM and DOI, the Roadmap for E-government therefore played a role in the evaluation of the GDE online application initiative in this study.

## 2.5 CONCEPTUALISING PUBLIC SECTOR INNOVATION IN THE PUBLIC SERVICE DELIVERY DEBATE

This section of the paper explores the concept of innovation as it applies to public sector and its delivery of improved services to the citizens.

### 2.5.1 PUBLIC SECTOR INNOVATION

Public sector innovation is seen as the conception, implementation and management of new processes, products and new means of service delivery that lead to improved organizational efficiency, effectiveness and quality outcomes for the public sector (Mulgan & Albury, (2003) cited in ANAO, 2009). The call for delivery public services in new, better and cheaper ways needs not be seen as bolt from the blue for many governments today, including the South African government and its various government agencies. Public servants need to be

appreciative of the importance of diversity in innovation and how to achieve it for the betterment of their service delivery (ANAO, 2009).

Until just the recent past, innovation was considered to be only relevant for private sector business; however it is increasingly being recognized as important for the public sector as well (Sorrensen, 2014:03). Hence, there is an increased emphasis by public sector organisation leaders on the need to transform the way services are delivered to the citizens in South Africa and beyond. Enhancing public sector performance has become a major objective that governments globally now seek to achieve with the motives for novelty in public sector being the need to achieve extensive service delivery improvements in efficient and effective ways that increase public value (Hartley, 2005). Public sector innovation especially in policy improvement and service delivery strategies is an essential ingredient for public services to become more targeted, more efficient and more responsive to the needs of society.

#### *2.5.1.1 WHAT THEN IS INNOVATION?*

Various scholars and researchers have come up with different working definitions for the term innovation. Koch and Hauknes, (2005) define innovation as the process where organisations do something new. This implies introduction of new practices, creating a new product, or adopting a new model of organizational relationships for effective service delivery. Taking innovation from a public sector context, the Australian National Audit Office (ANAO, 2009: 1) and Moore & Hartley, (2008) assert that innovation involves creating and implementing new processes, products, services and delivery strategies that result in major improvements in efficiency, effectiveness, responsiveness and qualitative

outcomes. Innovation therefore, entails among other things, the creation, adaptation and adoption of new approaches to service delivery.

Given the above definitions, it is imperative to note that innovation is not simply identical with change. Innovation is a step towards introducing new knowledge or new methods of doing things, differently and better than how they used to be done. Thus Mulgan and Albury, (2003) cited by Hughes et al, (2011) argue that innovation is not simply a new initiative but a new initiative converted into a new practice. This means innovation happens when ideas are identified and used practically as a new practice aimed at changing and improving the way things are currently done. Innovation as a translation of ideas into real practice is broader than creativity (ANAO, 2009: iii) and it therefore involves changes that are new to the organization, large enough to affect the organisation's operations appreciably (Moore, et al 1997: 8) cited in Hartley, (2005:27). In view of this observation by Moore et al, (1997) it is arguable that e-services though not new in the South African Government, are relatively new in the Gauteng Department of Education in the form of the new online application and learner admission system, hence it can be regarded as the Department's innovative way of improving its service delivery. According to Mugan, (2006: 149) cited in Hartley, (2005), the starting point for innovation can be an idea of an unsatisfied need followed by an idea of how the need could be met. It can be argued therefore, that innovation in public services need not be necessarily a physical artefact, but can be a change in relationships between service users and service providers in which judgment should be done about processes, impacts as well as outcomes of services.

### *2.5.1.2 WHAT ARE THE DRIVERS FOR PUBLIC SECTOR INNOVATION?*

Many factors have led to a need for better levels of innovation in all public sector organisations in both developed and developing countries (Hughes, Moore & Kataria, 2011). Western Liberal governments are increasingly seeking to resolve governance problems through enhancing the capacity of the public sector to be innovative Sorrenson, (2014:01). On the other hand, rising citizen expectations have created a greater demand for new approaches to service delivery that embrace models of user engagement, accountability and citizen responsibility (Hughes et al, 2011:04). Below is a brief description of public sector innovation drivers identified by the Australian National Audit Office (ANAO, 2009):

i. The need to respond to changing government and community expectations
ii. The need for coordinated approaches to service delivery that encourage collaboration rather than "silo mentality", thus involving negotiation, consultation, information sharing and cooperation across and within government functions and the private sector in dealing with citizen needs[10].
iii. The need for shorter periods of time for ensuring better service delivery. Governments are looking for and citizens are demanding customer focused approaches to service delivery, approaches that enhance a speedy turnaround time for processing and delivering services.
iv. Demands for efficiencies are pressurising governments to focus on doing much for less. For instance, the use of web-based technologies and

6 See also Borins, 2001. Borins, 2014., Hartley, 2005., Osborne, 2010 for collaboration as an innovation driver in modern innovation theories.

infrastructure developments is providing opportunities for innovative improvements to service delivery that were not previously available.

It is worth noting that what drives innovation in one country or government department may not be similar with drivers for innovation in another. Drivers for change are usually related to the different contexts of the government departments introducing the change.

Hood, (2010), cited in Sorrenson, (2014) argues that innovations are an attractive alternative for government during fiscal crises, as they promise a possibility of providing better solutions and welfare services from fewer public resources. Governance researchers (Kooiman, 2003; Klijn & Koppenjan, 2004) also argue that the numbers of wicked problems like long term unemployment, non-access to basic services, inequalities in society, among others, for which no easy solutions can be found are pestering governments forcing them to look for innovative ways of resolving these challenges. All the challenges or drivers identified above require different types of innovative solutions ranging from service innovations, policy innovations, business process innovation, among other types of innovation.

Hartley, (2005) thus distinguishes between five typologies of innovation namely:

i. Product innovation – introduction of completely new product e.g. new equipment
ii. Service innovation – changes in ways service are delivered to users
iii. Process innovation – new ways of designing organisational administrative processes e.g. linking the back and front office processes and procedures of the agency.

iv. Position innovation – innovations adapted to new contexts or users.

v. Strategic innovations – invention of new goals or directions/ purposes for an organization

vi. Governance innovation – referring to new forms of citizen involvement and democratic institutions e.g. e-voting, e-complaints

vii. Rhetoric innovations – development of new concepts and language e.g. the concept of the “fire pool” in the state president’s security upgrades at Nkandla can be an example of rhetoric innovations.

It is important to note that elements of multiple types of innovations may be evident in a particular change or innovation. For instance, the online applications innovation by the Gauteng Department of Education under this study has elements of service, process, position and governance innovations. Organisational administrative processes of the GDE are being re-engineered to link the front office operations of schools in the province with the back office procedures and processes of the district and provincial education offices. The innovation has also brought changes in the way services are being offered to citizens from manual processes characterised by physical queuing for services at government schools, to electronic access to services

However, while innovation is often regarded as a new idea or way of doing things, it may sometimes involve a reinvention of what already exists or an adaptation to another context, location or time (Hartley, 2005:27). It is therefore important that new and successful innovations in one government department be diffused to other departments or agencies for the effectiveness and efficiency of the public sector to be realized. What has been seen to work in one department

may be shared for adaptation by other public sector departments thus enhancing their efficiency.

Furthermore, although innovative approaches can be effective in bringing about new and better practices, innovation is not always celebrated due to its high risk of changing the status quo (ANAO, 2009), making it not to be openly received, especially in the African context. Despite the high risks involved in any innovation though, e-government is one key innovation that has gained the appreciation of most public and private sector organisations as a tool for improved public service delivery (Safeena & Kammani, 2013:13; Nven-Nkohkwo & Sirajul Islam, 2013; Naz, 2009; OECD, 2010). Below is an exposition of the e-government concept and its applicability to public service delivery.

### 2.5.2 E-GOVERNMENT INNOVATION AND EFFECTIVE PUBLIC SERVICE DELIVERY

In the public management and administration field, there is a growing interest in the debate on the transformational impact of e-government or the absence thereof on governance and public service delivery (Chatfield, 2009:135). This is because the way business is performed these days has been greatly influenced and changed by the sudden increase in digital connectivity and considerable improvements in information communication technologies (Ndou, 2004:01; Elsheikh et al, 2008). Revolutionary changes brought by information communication technologies (ICTs) to the global society are pushing governments to develop more elegant ways of digitalizing routines and practices in order to offer more efficient, effective and responsive government services to the citizens according to Safeena & Kammani, (2013:13). Most governments are therefore expanding the range and ease of access of their services in a bid to

ensure speedy, more responsive and transparent government services to the citizens. Faced with the difficulty of transformation coupled with the need for government systems reinvention, governments globally including the South African government, are being pressurised to find new ways of delivering information, knowledge along with services that are efficient and cost-effective through the use of information communication technologies, that is, electronic government (Fang, 2002; Ndou 2004; Naz, 2009). A great impetus to promote higher quality, economical government services as well as better citizen-government relationships is thus presented through e-government adoption (Safeena & Kammani, 2013:14). E-government is therefore perceived as a way of transforming the way things have been done, from inefficient and ineffective traditional manual processes to modern customer-centric public services and policy that are driven to meet the needs of an ever-changing, globalized society (Bannister 2001) cited in Chatfield (2009:135).

Since offering services electronically has become common practice, the term e-government has also become a popular buzzword in most public service organisations locally and globally Proper service delivery is fundamental to modern democratic system or government, with access to government information and services by citizens being a key ingredient to effective governance. Hence, Nven-Nkohkwo & Sirajul Islam, (2013: 253) argue that the increasing value of e-government stems from its capability to promote better governance, to raise service performance and to minimise restrictions in the the process of delivering services to citizens..

Quite often though, people tend to wonder whether e-government has any tangible benefits to government service delivery and whether it does speed up and simplify service delivery to the communities. Questions often come up pertaining to how the concepts of e-government and public service innovation tie in with public service delivery debate. Mutula, (2010:39), cited in Nkomo, (2012) argues that there is an inextricably intertwined relationship between e-government and effective service delivery. E-government service delivery needs to be considered as a more feasible, fast and cost-effective way of conducting transactions with the citizens (Maumbe, Owei, and Taylor, 2007). E-service delivery through e-government shows a government's (and its agencies') readiness to extend services and information to its constituents in the quickest and most viable way where traditionally such services were delivered in a face to face situation with government officials at public offices. This makes e-government a suitable lever against which outmoded bureaucracies can be changed by making services to be available to the citizens at any time and at any place (Heeks, 2006) and enabling government officials to serve the public efficiently and effectively (Elsheikh et al, 2008:84).

The increasing implementation of e-government by many countries is evidence of its recognised role as an effective tool for effective and efficient service delivery, making it the cornerstone for service provision to the citizens at all levels of government (Esmat Ara, 2015; DPSA, 2001)). Traditional government practices and service delivery, characterised by lots of red tape, as well as orthodox manual processes are being replaced by electronic provision of information online and automation of processes that were previously laborious and time consuming to both government and citizens (Fang, 2002; Anni, 2016).

Governments are thus implementing e-government in anticipation of bringing government services closer to the citizens. In so doing, the way citizens interact with government and receive services is greatly improved.

Multiple benefits of e-government have been highlighted in government sectors of both developed and developing countries. Research findings on the IRS's e-filing system and Ireland's Revenue online service initiatives provides evidence of e-government's impact on improved service quality and its ability to restore once lost public trust in the government (Bird & Oldman, 2000; O'Donnel et al, 2003; Moon, 2003). The use of new technologies in different countries' public sectors has not only helped in improvement of public service delivery, democratisation of services and improved effectiveness of government, but has also led to more responsive, transparent and more accountable service delivery, thus promoting the practice of good governance (Chatfield, 2009; Anni, 2016; Haque & Panthrannarakul, 2013:25). E-government has therefore become the means by which governments and their public sector organisations can participate in the new improved landscape for service delivery and good governance.

ICT innovation in the private sector has caused public sector organisations world-wide to rethink a paradigm shift from hierarchically controlled organisations towards modernising their administrative practices and management systems (Haque & Panthrannarakul, 2013:26), thus creating network organisations that are characterized by horizontal and vertical integration, speedy service delivery and a customer focused strategy through e-government adoption. Thus, Jones and Hackney, (2007) purport that within the next few years e-government through

effective ICT use will have transformed the manner of public service delivery and the fundamental relationships of government, citizens and businesses.

#### *2.5.2.1 E-GOVERNMENT GOALS*

Haque & Panthrannarakul, (2013) identify the following five main objectives that e-government seeks to achieve in most organisations:

- Bringing government closer to citizens by ensuring that they have easier access to government services and information.
- Increasing government sector's responsiveness in delivering services that meet individual, citizens' and business needs effectively and efficiently.
- To modernise public services through enabling government institutions that are connected at various spheres of government.
- To create a more accountable and transparent public sector.
- To enable agencies to communicate and work more effectively and efficiently.

The Australian National Auditing Office (ANAO) Audit Report also recommends the use of e-government by government agencies to achieve greater efficiency in providing information and services to citizens (ANAO, 2004). Furthermore, Fang, 2002:11; World Bank, 2002; Ndou, 2004 and Anni' 2016:16 posit that e-government in any organisation should seek to satisfy the following goals:

i. To provide better services to the citizens.
ii. To ensure cost-effectiveness and efficiency of service delivery.
iii. Aim to reduce transaction costs in delivery.
iv. Improved turnaround time for service delivery.

v. Enhance public sector innovation and improvement of leadership.

vi. Promotion of greater public participation and e-democracy

Haque & Panthrannarakul, (2013:25) and Anni, (2016:10) further argue that employment of ICT in government service delivery processes aims to improve the substandard nature of the civil service and to enable more accessible, transparent, responsive and accountable service delivery. Implementating e-government is envisaged to reduce operational costs of public services for both government and citizens, as well as create more responsive governance, with consumer aspirations of e-government services being the major concern. Hence e-government application is done with the focus on transforming the traditional service delivery modes characterised by lots of red tape and orthodox manual processes, through electronic provision of information online and automation of once laborious processes (Bwalya et al, 2012:16; Elsheikh et al, 2008:84).

Growing evidence indicates the commitment public of sector organisations to invest in ICT and e-government in particular, in the hope to improve internal management as well as services through innovative communication strategies and facilities (Naz, 2009:191). According to Pascual, (2003:10) e-government seeks to achieve five broad goals. Firstly, it aims to create better business environments which encourage online rather than in-line customers. It further seeks to strengthen good governance and to emphasise the importance of public participation. The fourth and fifth goals are to improve the output and effectiveness of government services and enhancement of the quality of life for disadvantaged communities respectively. Naidoo, (2007:324) therefore argues that e-government should aspire to provide more appropriate and accessible public administration to citizens, business and employees, leading to

accountability by government and access to information by all people. Cook *et al,* (2002:2) weigh in on the argument by explaining that e-government is aimed at streamlining business processes, with the implementation of an IT system expected to reduce steps in business process routines through automation of once manual functions. E-government is thus envisaged to enable provision of new ways forward in assisting with enhancement of government processes and the connection of government with the general public. Hence, Pascual, (2003), Cook *et al*, (2002) and Naidoo, (2007) all agree that e-government necessitates three change potentials in government processes namely:

i. Automation: the replacement of existing human executed processes.
ii. Supporting of current human executed processes like communication
iii. Transformation: supporting new human executed processes with new techniques for service delivery.The change potentials above are evident in the newly introduced online applications by the Gauteng Department of Education. Queuing in schools to submit applications is being replaced by submission of applications online (automation). The system is supporting human executed processes like analysis and processing of applications, electronic communication between the agency and applicants and it is aiding the transformation from manual to electronic management and processing of applicant data. Kendall and Kendall (2008) are also of the view that e-government goals can be classified into process objectives that focus on improvement of government service delivery procedures and public administration objectives. Below are the e-government process and public administration goals as illustrated by Kendall and Kendall, (2008)

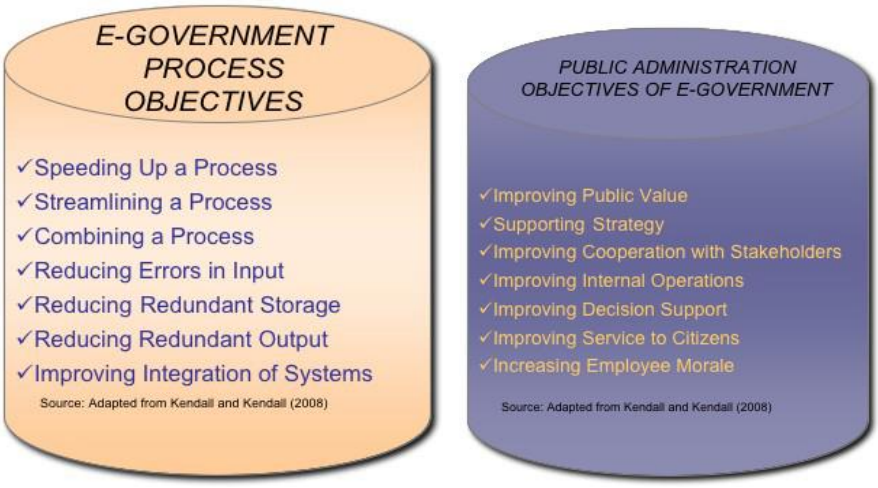


**Figure 2.5: E-government process and public administration objectives**

It is imperative to note that the goals for e-government vary considerably across governments. They are determined locally based on the political environment and the philosophy of each government (ITU, 2008:15). Public e-service objectives have to align with the overall objective / mandate of an agency as well as with its high quality communication goals Axelson, (2009: 252). New e-government projects are initiated normally based on “a problem that needs to be solved or an opportunity which can be seized” (Heeks, 2006:162). Such opportunities and problems can arise from sources such as employee workload, complaints from citizens, strategic plans of the agency among other sources. Hence, while countries may adopt models used by other governments for implementation of e-government, the models need to be adapted to suit the needs and contexts in which they are to be applied, rather than a wholesale importation. Technological advancements and government knowledge of what the citizens need usually determines the design of online services (Zafiropoulus, Karavasilis and Vrana, 2012:528).

#### *2.5.2.2 POTENTIAL BENEFITS OF E-GOVERNMENT*

Literature highlights benefits of e-government accrued by countries that have adopted the concept. The following are some benefits identified by ITU, (2011:13) for any country thriving to be an information and knowledge society through e-government:

- E-government provides options for e-services which enable online public access to government information, services and programmes.
- It provides access to social and educational services including distance learning, health and welfare, learner admissions and other public benefits
- Convergence of voice and data networks that empower transmission of information through text messaging, email and instant messaging, thus utilizing internet and non-internet connectivity methods in delivery and accessing services and information.

Through e-government, citizens can have direct access to services within hours rather than days, while government employees are enabled to do their work efficiently and effectively (E-government Strategy Report, 2002), cited in Elsheikh, (2008:84). Quoted by the UNDP, (2001), David Barn, an IBM Executive, argues that transformation to e-government would help improve employee productivity, transparency and accountability, reducing duplication and better management of data. Hence e-government should be understood as a tool for change and service delivery improvement by any organisation that chooses to implement it, including the Gauteng Department of Education in this study.

Haque & Panthrannarakul, (2013:13) also highlight a list of benefits that come with the implementation of e-government. They argue that it promotes a shift from decentralised single purpose organisations to a more unified whole-of -

government model for public service delivery. Therefore, it is arguable that application of e-government technology in the public sector not only helps in improving public service organisations' efficiency and effectiveness of, but also enables government to make use of available resources to the advantage of both citizens and itself.

E-government adoption increases democratisation of services, and leads to more transparent, responsive and accountable service delivery, thus promoting good governance practice by those governments that implement it (Chatfield, 2009; Matavire, 2010; Anni, 2016). It makes room for public service process re-engineering and re-invention, leading to reduced costs for both government and citizens in accessing and using services, as well as lessening the chances of corruption (Haque & Panthrannarakul, 2013:33; World Bank, 2002; Fang, 2002:5). Hence, implementing e-government should be perceived as a cost-effective measure that needs to be recognised when e-government projects are being initiated. For instance, projects like the GDE online application system should be seen to bring benefits for both government and citizens if they are to be acceptable and sustainable.

E-government ushers in transformational government characterised by a change of public administration, from ineffective and inefficient traditional government-centric public service silos to citizen-centric policies and services driven to meet the needs of an ever-changing globalized society (Chatfield, 2009:135). In a study of the Fiji situation, Naz, (2009) found out that e-government had a positive co-relationship with effectiveness, efficiency and equity in service delivery. Most respondents in this study believed that e-government has significantly improved

service delivery in terms of efficiency and effectiveness of the services offered in public service organisations, leading to the conclusion that e-government can advance service delivery and customer contentment (Naz, 2009:192). Thus e-government application has the capability to boost improved service delivery, improve citizen empowerment through access to information, improve government–citizen interactions and improve the efficiency and effectiveness of government management processes (World Bank, 2002; Ndou, 2004). Minimized physical interaction between agency staff and clients through a web interface that allows transactions between the two without physically meeting is enhanced Goldkuhl & Persson, 2006), done through direct online communication of the customer / citizen with the front and back-end processes of the agency (Pillay, 2012). Hence, providing a range of online government services through e-government application generally contributes positively to all areas of government, that is, from democratic participation, speedy service delivery, to improvement of interactions with all stakeholders.

The economic advantages of e-government are endless. With the evolution of technology, new initiatives and markets open up for the public to be inventive and foster on their own development, enhanced through provision of guidelines, platforms and online consulting service to ordinary citizens.

However, despite the multiple advantages available through successful implementation of e-government, a myriad of disadvantages of e-government also exists (Ndou, 2004; Nven- Nkohkwo & Sirajul Islam, 2013). The major disadvantages include the likely exclusion of citizens without access to technology (e-exclusion) due to the digital divide, (Matavire, 2010). Lack of citizen

trust of the e-government platform, especially in matters related to information security may result in poor to no engagement of the citizens (Bwalya et al, 2012:17). Another problem is that there is no “one size fit all model of e-government. Hence, what works in a developed country not be feasible results in the context of developing country, making wholesale importation and adaptation of e-government practices and projects a possible recipe for e-government failure (ITU, 2008:27). For e-government to bring advantages, organisations adopting it need to have skilled human resources who are capable of adapting new technologies and global practices to their local contexts.

## 2.6 E-GOVERNMENT SERVICE TYPOLOGIES.

The role of e-government technology entails three main forms of interaction with three main distinguishable target groups namely the citizens, businesses and other government agencies (Haque & Panthrannarakul, 2013; Anni, 2016; Makene, 2009:35.) E-government services thus vary depending on the type of relationship facilitated by use of ICTs. Brynard (2002) argues that e-government on the internet can handle three major interaction scenarios namely Government to Citizen (G2C), Government to Business (G2B) and Government to Government (G2G), which Kitaw, (2006) cited in Makene, (2009: 35) refers to as the primary models of service delivery. In reviewing literature on the various typologies of e-government the researcher would have insight into the nature of services offered via the GDE online application and admission system. A description of each e-government service model / typology is given below:

### 2.6.1 Government to Citizen (G2C)

This is a type of service that represents all activities directed to citizens by government or its agencies. The model makes the citizen the receiver while the

government is the sender in the communication structure, and sometimes vice versa. Services entail the distribution of information and services to citizens through use of the internet (online). Thus Naidoo, (2007: 323) refers to the G2C services as e-citizen services and argues that they are initiatives connecting citizens to government while improving relationships as well as the services rendered to the people. The interaction is facilitated through government websites and portals (e.g. www.gde.gov) with links created that can enable downloading of forms and which usually present information and services directly to the citizens while citizens may also use the same portals and its links to provide necessary information to government that will enable them to receive relevant services. G2C services include provision of downloadable information and forms, license renewals online, income tax returns filing and online school applications and admissions as in the case of this study. The aim of such services is to reduce the need for citizens to physically queue at service centers for direct physical services from government employees as well as to ensure timely services to the public through a variety of channels (Haque & Panthrannarakul, 2013:25). The GDE online application system under this study presents this G2C model which facilitates improved interaction with citizens and electronic delivery of services by educational institutions in the Gauteng province thereby reducing the need for physical queuing for services at schools and education offices.

### 2.6.2 Government to Business (G2B)

Services under this model represent business activities conducted by a government and its agencies. It involves the exchange of services being between government and private businesses, including dissemination of policies and

regulations for conducting business with government. This e-service model, according to Brynard, (2002) helps to open up opportunities for citizens and private companies to offer services directly in an accountable and transparent manner to government. The DPSA, (2001) refers to this model as e-society services which are described as how government strives to improve interactions with business and society through use of technology. Simplified procedures facilitate registration and approval of small and medium enterprises to access information while e-procurement enables them to bid for large government procurement projects (Haque & Panthrannarakul, 2013:25). Information and services offered include government procurement processes, tendering procedures, outsourcing activities, taxes as well as any payable services. Downloadable and printable material is also made available to businesses for interaction with the government. This model of delivery is not yet covered by the new GDE online application service, but in future it can be included by the department when they may extend the need for application for tenders via the system.

**i. Government to Government (G2G)**

This represents activities done within government in connection with its various agencies. It involves internal processes that link front and back office operations. The ITU, (2008), purports that G2G services promote inter-governmental relations within and between government organisations by coordinating stakeholders nationally, provincially and locally. Focus is on the creation of an informational sharing hub within agencies and with other government departments. According to Naidoo, (2007:323), this interaction is often called e-administration, meaning that G2G makes use of technology to improve internal

administration processes of government, to put into practice economical measures that to promote the efficiency of government staff. The GDE online application system is seen to be enhancing improved G2G interactions as well as enabling networked educational institutions that have the capacity of sharing information, thus improving their efficiency in service delivery.

Internet is regarded as the most influential means of delivering e-government, although the concept of e-government is not accomplished only over the internet. Hence, the Gauteng Department of Education's e-government initiative though mainly internet based (online) also combines other means of e-government through the incorporation of mobile technology (m-government). Thus, SMS system is also used to convey information to applicants' mobile phones at each stage of the application process

## 2.7 A GLOBAL REVIEW OF E-GOVERNMENT PROJECTS / IMPLEMENTATIONS

Below is a review of two successful e-government projects undertaken in two countries namely Malaysia and Japan.

### 2.7.1 THIMPU THROMDE ONLINE EDUCATION SYSTEM SERVICE, MALAYSIA

This is a collaborative project between Thimpu Thromde Education Office and Lincoln University College of Malaysia, founded upon a request by the Honourable Mayor of Thimpu Thromde. Lincoln University agreed to support the online services project and the project was launched on 10 November 2015.

The main purpose of the project is to improve the Thimpu Thromde education service in order to provide faster, easy and reliable services. This is done through provision of simplified learner admission procedures, university student

registrations and easy correspondence for parents and anyone seeking admission in Thimpu Thromde schools.[11]

Thimpu Thromde Education Office in collaboration with Lincoln University offers an online portal for learner/student application. The portal enables provision of information by applicants in order for the processing of applications to be done. The basic information collected from applicants via the online portal for processing of applications includes:

- Personal details of applicant, like names, contact email / cell phone, date of birth, identity number
- Parent information ( citizenship number, occupation, contact number, address, mother tongue)
- Permanent residential address
- Supporting documents (copies of ID, birth certificates, school reports, proof of residence etc.)

Furthermore, downloadable instructions for the application process are available on the same portal. Apart from submission of applications, the portal also makes provision for online tracking of applications by the applicants to different local schools without having to go to schools for physical checking.

On the Thimpu Education Office portal, a link is also made available for employee employment, which is used by those who want to apply for jobs in the Thimpu City schools. On this portal, people can view available teaching jobs in different schools and they also upload their applications electronically to the Thimpu Office.

[11] For more information, visit www.thimpu.education_e-service.org/applications

The Thimpu Education office online administration / management link allows the Thimpu office to manage its affairs online, enabling distant management of schools by the main office. This portal allows school login for all schools in the city and an interactive interface between the schools and the head office. Since this project is a collaborative effort with Lincoln University College, a portal for student registrations into the Lincoln University is also available. Hence, the project aims to make a one stop gateway to education services in the Thimpu Thromde area.

The Thimpu Education Office has identified several advantages brought about by this online initiative. One advantage is that it has enabled hassle free, smooth student management processes. It has also made it easy for parents to apply for their children's learning space from any place and at any time, making it a more convenient service delivery mechanism for both the education office and the parents. The Thimpu Education Office management argues that the portal has greatly reduced the application processing time, enabled easy assignment and fair distribution of learners to various schools as well as easy and more improved management of student data. Students are assured of having been placed in schools before the beginning of the academic year, something which also promotes effective strategic planning by the Thimpu Education office and the Thimpu City schools in particular.

Apart from the improved learner enrolment and management, the project is also advantageous in its facilitation of the employment applications in the Thimpu City schools. Since applications are done online, allowing uploading of all relevant documents, this has helped a lot in reducing the time for checking job

applications and responding to applicants. Furthermore, employee data is easily managed online, unlike in the manual processes where lots of paperwork had to be kept as employee data. The Thimpu Office has access to information about its schools and makes it possible to manage staffing and employee needs online. Assignment of employees required in different schools has also been made possible through the project. Of importance is the fact that schools are easily connected to the Thimpu Thromde office and therefore can get immediate updates and feedback on any enquiries and requests.

It is the wish of the project planners for this Thimpu Thromde Education E-service system to have a fully comprehensive web portal to education services in future. Parallels can be drawn between the Thimpu E-services and those of the Gauteng Department of Education in this research study. Both operate through a web portal that allows interaction between the education department within a specific region with its clients (applicants) through online submission of applications and electronic processing thereof. Both have the goal of reducing direct physical contact between service providers and service users with their focus being on speedy processing of applications. E-government implementation is seen to enhance online management of what happens in various schools under both the Thimpu Thromde City schools and the GDE schools in this study and both education offices aim to see most learners placed in schools before the beginning of each academic year. The Thimpu project and the GDE online application system both focus on provision of convenient service delivery channel that allows parents to apply for their children’s place in schools from any place and at any time during the application period. The use of e-services is thus bringing

transformational changes and outcomes to both the Thimpu Thromde Education System of Malaysia and the GDE of South Africa in our study.

There are however few differences in the two projects. While the Thimpu project includes an employment portal for submission of employment applications to the Thimpu City Schools, the GDE online application system so far makes provision for submission of learner applications only. Furthermore, unlike in the Thimpu Thromde education e-service where both personal information and supporting documentation for applications are uploaded, the GDE system does not have the link for uploading documents as yet, meaning applicants still need to go to schools to physically submit after being offered space. These differences point to the fact that although they are both offering e-services in education, the Thimpu Thromde Education office and the Gauteng Department of Education are at different levels of e-government evolution.

### 2.7.2 JAPAN'S NATIONAL TAX AGENCY E-TAX INITIATIVE.

The National Tax Agency was formed in 1949 as a centralised tax administration and control agency under the post-war structural reforms in Japan. The E-tax initiative is an e-government project launched by the Japan National Tax Agency as a response to central government's push for e-government (Chatfield, 2009:136).

Chatfield, (2009)[12] carried out a research study on Japan's e-tax system and found out that at inception, the NTA was marred by confusion among the stakeholders due to lack of sufficient knowledge about accounting and taxation. Bureaucratic and inefficient responses of the National Tax Agency created

[12]See Chatfield, A.T. 2009. Public service reform through e-government: A case of e-tax in Japan. Journal of E-government. 1(2):135-146. Available online at www.ejeg.com

taxpayers' distrust of the Agency. Up to 2003, tax administration, filing and enquiries were done physically at various tax offices with lots of paperwork and red tape in the system (Chatfield, 2009:138). Due to the tedious processes, taxpayer compliance costs also increased while the NTA's administrative efficiency got challenged.

With improvements in the economy after post-war structural reforms, more administration workload was experienced by the Agency. With the increase in number of taxpayers due to the improved economy, clients had to queue for long periods of time to receive services. Hence, a new need emerged to review the administrative processes of the agency leading to the pilot testing of the E-Tax system in 2004 in Nagoya and full scale launch of the of e-Tax nationwide in only three months after pilot testing (Chatfield, 2009; NTA, 2004).

The e-Tax menu on the National Tax Agency's website allows the public to register for e-tax use, file tax returns online as well as to make online transactions and payments. The NTA website and e-service through e-tax is the first example of public service transformation through e-government in Japan. From one central government web portal (www.e-gov.gov.jp) taxpayers can access the NTA homepage, from which a main menu including e-tax can be viewed and accessed. Hence Japan managed to create a one stop gateway to government online information and public services. As more e-services are come up, they are simply added to this central government web portal for access by users of the services.

#### *2.7.2.1 WHAT ARE THE OBJECTIVES OF THE E-TAX INITIATIVE?*

Below are some of the objectives of Japan's e-tax initiative as identified in the Chatfield, (2009) research study:

- To radically improve the NTA's tax administration efficiency both at back office and front-line tax consultation.
- To reduce costs associated with customer tax complianceby reducing travel costs and paperwork through online tax filing.
- To offer "more convenient services for the public and manage administrative operations in a more simplified, efficient, advanced, accountable, transparent and responsive manner by use of ICT" (NTA, 2007:29).
- To create a favourable environment for taxpayers characterised by provision of accurate information and tax administration procedures.
- To enable prompt response to taxpayer enquiries
- To promote collaboration and involvement of the public with regard to compliance with tax regulations.

#### *2.7.2.2 THE TRANSFORMATIONAL IMPACT OF JAPAN'S E-TAX INITIATIVE.*

Chatfield, (2009) argues that the case of transformational effect of e-government should be evident in greatly improved government performance as well as evidence of use of IT in the improvement of performance. In view of this assertion, it can be argued that the NTA's e-tax system had great transformational impact on the government of Japan and in the tax administration agency in particular as indicated below:

i. The e-tax system made it possible for taxpayers to file their income tax returns and tax payment over the internet, thus saving them time and travel costs to tax offices.

ii. The internet based tax system and central information system enabled networking of NTA officers, frontline consultants and taxpayers to share digital information together on a one stop entry, replacing paper-based communication and information sharing.

iii. The NTA staff was enabled to do their work effectively and in less time than during the use of traditional procedures, thus, service delivery performance was improved.

iv. The efficiency of the NTA benefitted taxpayers, they started receiving timely responses to their enquiries and questions thereby restoring their trust in the agency which they had once lost.

v. Tax office congestion was greatly reduced by the e-tax system and customer satisfaction with the NTA's tax services was improved.

To a greater extent it can be argued that the e-tax system was a great success. Citizen adoption of the e-tax system without any incentive for its adoption is evidence that the system impacted on the performance of the NTA. Voluntary adoption of the system was thus one of the yardsticks for measuring e-government's achievement in enhancing public administration transformational change (Chatfield, 2009:142). Figure 2.7 below shows the trends in the adoption of e-Tax between 2003 and 2007.

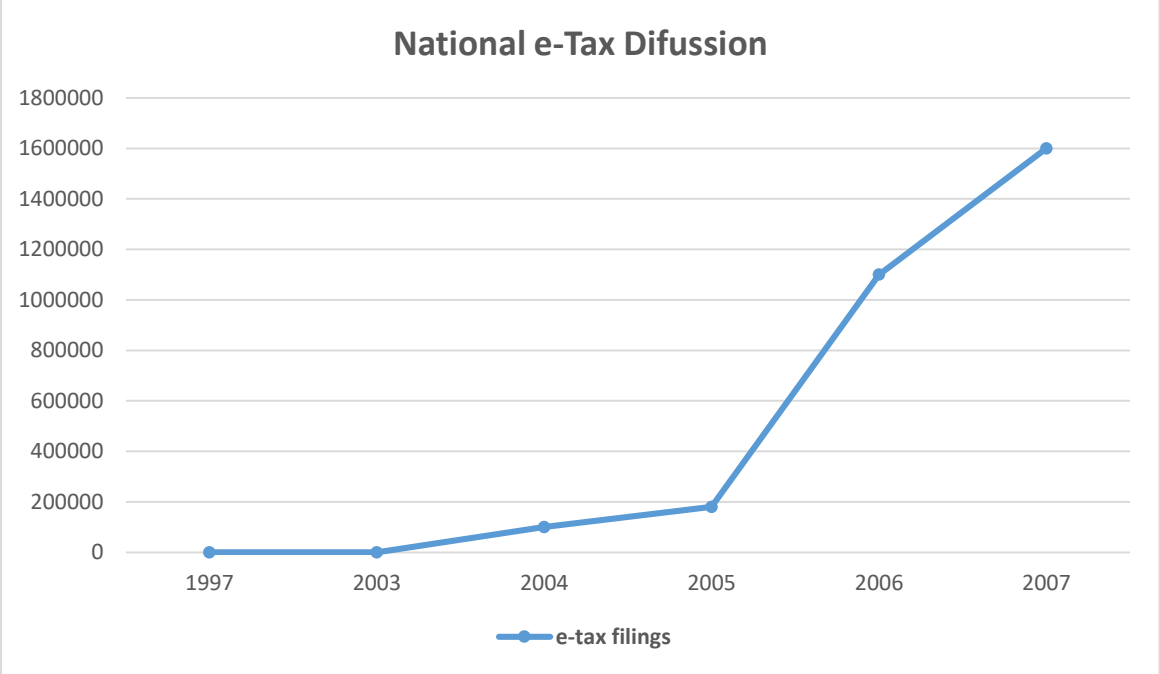


**Figure 2.3: e-Tax adoption trends 2003-2007**

*Adapted from Chatfields, (2009) study.*

According to the information gathered in the Chatfield (2009) study, by 2006 barely two years from the introduction of e-tax, 1057153 tax returns were filed through the e-tax system, skyrocketing to over 1.6 million e-tax returns by the year 2007. This indicates a rapid diffusion of the innovation among the taxpayers. This was evidence that the service users viewed the system as useful and easy to use (high perceived usefulness and perceived ease of use). In other words they saw the e-tax service as superior to the traditional tax systems it replaced; hence they were quick to voluntarily adopt it. The increasing trend of final tax returns by individuals within the same period testifies also to the success of the e-tax system. Figure 2.8 below displays the individual tax returns between 1967 and 2006.

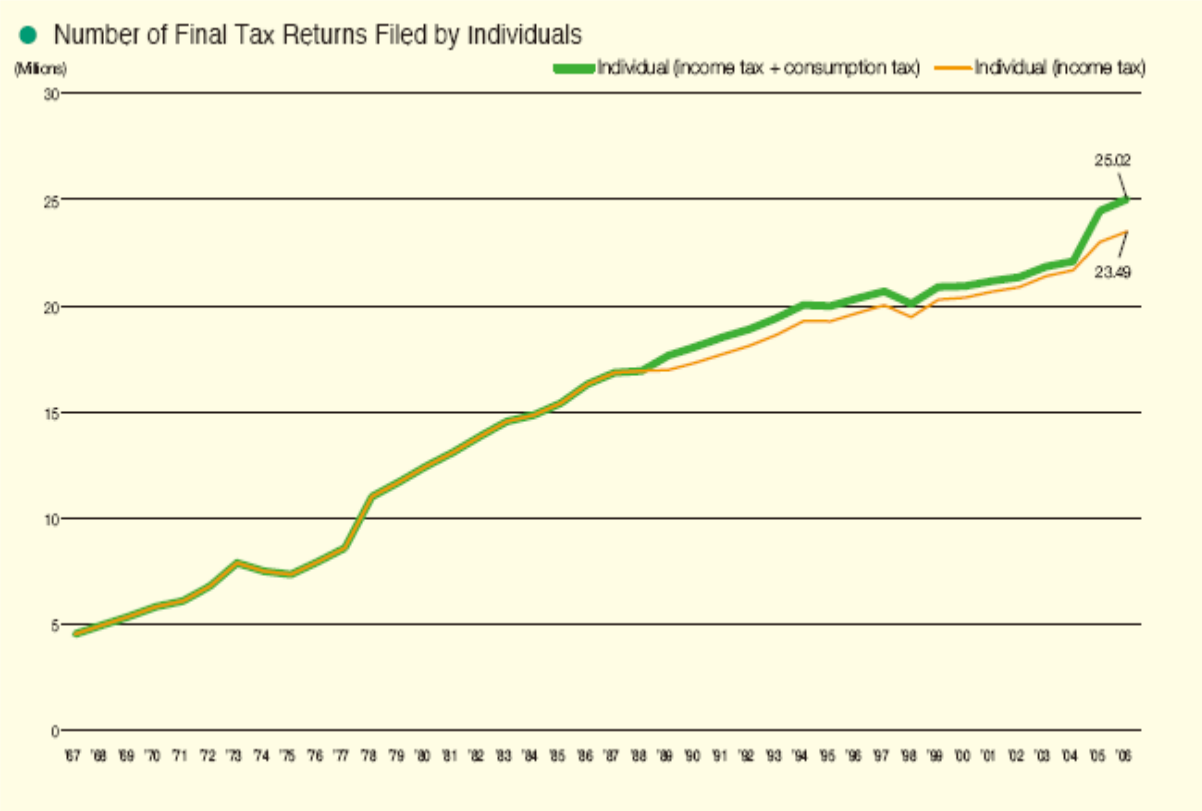


**Figure 2.4: Trend for individual tax returns.** ***Source: Chatfield, (2009) e-tax case study.***

It was thus concluded that the e-tax service had positive transformational impact on the government agency's performance as it would not have been possible to achieve such improvements and reduction in tax compliance costs without the intervention of the e-tax system (Chatfield, 2009:144).

#### *2.7.2.3 RECOMMENDATIONS FROM THE CHATFIELDS, (2009) STUDY.*

Having analysed the e-tax system carefully, Chatfields, (2009) came up with the following recommendations regarding e-government implementation, which can benefit countries intending to take the e-government pathway:

i. It is important to develop more sophisticated e-government projects that can transform public service quality and responsiveness through

development of websites that are fully integrated and that enable execution of online service delivery and self-service.

ii. For agencies and government departments to realise transformational strength of the internet, they need to adopt e-government models that focus on incorporation, functionality and improvement of democracy.

iii. E-government initiatives should create networked information sharing organisations that link both the frontline and back-office staff of the organisations.

iv. E-government implementation requires mobilization of internal resources, in particular, skilled people, to implement changes

v. Strategic communication of the e-government intent throughout the organisation matters a lot in the implementation of e-government projects.

## 2.8 COMMON CHALLENGES TO E-GOVERNMENT IMPLEMENTATION IN THE PUBLIC SECTOR

Global and local literature provides information on common challenges affecting the adoption of e-government in public sector organisations. Whether it is in developed or developing countries, e-government implementation is not to be viewed as a walk in the park as various obstacles may hinder successful implementation of projects.

Ndou, (2004) argues that e-government implementations in developing countries are more problematic. In his web-based research of 15 developing countries, Ndou, (2004) observed that there is less potential for developing countries to enjoy full e-government benefits. Key challenges in Africa identified in the study include:

- Information and communication infrastructure development is inadequate

- Lack of human resources and employment skills
- The position of most African states in the world economy leaves them in a compromised position with regards to effective employment of ICT in government
- Insufficient legal and regulatory frameworks as well as clear government strategy for e-government.
- Low literacy levels among citizens get in the way of the type of media that can be available for e-government to be effectively adopted.

It is further argued that most projects are adopted without adequate reflection of social, cultural, economic and historical context in which they are to be implemented (Matavire *et al,* 2010; Ndou, 2004; Haque and Panthrannarakul, 2013: 33-34; Safeena & Kammani, 2013:20). There is need for governments to understand the local contexts in which e-government will be used, realizing that there is “no one size fits all” when it comes to e-government models. ITU, (2008: 27) argues that some governments have a tendency to adopt ICT strategies that were developed and applied in the developed world, whose contexts differ widely with those of the developing countries. It is important to note that what works in developed countries may not effectively work in developing ones, hence the need to fine-tune new technologies and global practices to the local context. However, government institutions often lack skilled human resources with such ability to modify technologies to suit their needs (ITU, 2008:27; Ndou, 2004). It is further emphasized that continuous e-government development is challenging and resource extensive even for developed e-government countries (OECD: 2010:7).

Oseni & Dingley, (2014)[13] in their study of e-service adoption challenges in Nigeria found out that poor to lack of finance was one major barrier to e-government success. They argue that projects may not see the light of the day if not properly financed for implementation. The high cost of ICT equipment and maintenance of telecommunication infrastructure however, depends on the availability of funds.

Trust issues were also identified by Oseni & Dingley, (2014) as a hindrance to successful e-government adoption. They argue that many people may not be willing to use e-services if they feel that their data security will be breached. Online transactions via e-service portals make people to feel unsafe to disclose their personal information for fear of cybercrime (ibid). The authors also agree that high illiteracy levels result in usability issues. They argue that a big fraction of the population in their study had low literacy levels and their needs are often not considered during web-design. Hence, in the end, projects end up being implemented that do not have a direct benefit for the intended users.

Gokmen, (2010: 31) asserts that there exists providers' side and user side challenges to e-government. On the providers' side, sufficient technological infrastructure should be built to enhance e-government transformation. However, a high level of technical and technological know-how is required which are often lacking in organisations planning to implement e-government. Furthermore, most failures stem from lack of funding, security concerns and inadequate infrastructure.

[13] For more details see Kazeem Oluwakemi Oseni & Kate Dingley, 2014. Challenges of e-service adoption and implementation in Nigeria: lessons from Asia. *International Scholarly and Scientific Research & Innovation* 8(12) 2014.

On the user side, the problem of unequal access to e-government services, exacerbated by the digital divide in the stratified societies is a big challenge to e-government development (Gokmen, 2010:31; Matavire, *et al*, 2010). The following factors are added to the list of impediments to e-government by Axelson, (2009:253):

- Absence of commitment by top managers of organisations to e-government transformation
- Lack of technical alignment of initiatives
- Insufficient knowledgeable personnel
- Lack of user involvement in the planning of the e-government projects
- Linkage of the e-government projects to the business (non-alignment to the vision of the organisation.

Mphidi, (2009:6) also identifies a long list of e-government challenges that include privacy issues, security concerns of users, economic and social disparities between expected users, access to technology, human resource matters among other challenges in the South African context. Hence, it can be argued that challenges are often prevalent in any attempts to implement e-government initiatives and they need to be paid careful attention to if the initiatives are to bear benefits for service delivery. Some of these challenges will be discussed in Chapter 3 when we zoom in locally to the South African E-government pathway.

## 2.9 CHAPTER SUMMARY

The chapter reviewed and contextualised relevant literature on e-government innovation and service delivery from a global context. Key concepts that relate to e-government were defined in the context of the study, while various stage

models of e-government development were discussed. Theoretical frameworks that informed this study, namely the Technology Acceptance Model (TAM) and Diffusion of Innovation (DOI) were briefly discussed, supported also by the E-government Roadmap for Developing World (ERDW). Literature was explored on the area of public sector innovation and its drivers as well as the influence of innovation on service delivery. The concept of e-government was discussed in depth, highlighting the goals of e-government and potential benefits brought through e-government implementation. The researcher went on to discuss the various e-government typologies which include G2C, G2B, and G2G relationship in e-government implementation. An analysis was done of two e-government project implementation at a global level that had an influence on improved service delivery. These two projects are the Thimpu Thromde Online Education System Service of Malaysia and Japan's National Tax Agency's e-Tax initiative. In concluding the chapter, a discussion was made on the common challenges to e-government implementation in the public sector globally. The next chapter zooms in to explore e-government implementations in a local context by discussing e-government development in the South African context.

# CHAPTER 3: E-GOVERNMENT IN THE SOUTH AFRICAN CONTEXT

## 3.1 INTRODUCTION

Most governments in both developed and developing countries are embracing e-government as part of innovation in public sector management. The aim is to improve service delivery, access to information, as well as to enhance transparency of service delivery and ensure responsiveness to societal needs. E-government and e-governance are thus seen as means to communicate development and create space for active public participation, good governance and to enhance democracy (Nzimakwe, 2012: 56-68; UNESDO, 2005). Quina, 2015 also posits that e-governance improves government processes, connects citizens and builds interaction with civil society. The road to good governance goals and developmental targets is paved through improved processes and access to information (Quina, 2015: iii). With the world becoming a global village that is technologically driven, developing countries, South Africa included, can benefit greatly from e-government implementation. Mutula and Kalaote (2010:64) thus purport that the introduction of ICT in brought changes and improvements that helped in public service delivery enhancement thus enabling cost-effective government service delivery and increased public participation. However, many developing countries still lag behind in this aspect due to insufficient technical infrastructure and human capital to provide internet access resulting in poor to no provision of online services and programmes (Pillay 2012: 3).

Despite this common trend in developing countries over the past two decades, in South Africa there is a growing awareness of the significant contributions of e-government implementation to good governance with a strong focus placed on improving government conduct and operations (Naidoo, 2011:33). Added to the

question of the general standard of public services in South Africa are issues of transparency, accountability and responsiveness of service delivery by the government. Improving the effectiveness of the public sector is a major objective of most governments globally including South Africa, with the need to deliver services in new, better and cheaper ways becoming the order of the day (ANAO, 2009: iii). Innovation in the public sector is therefore very necessary in order for services to be more targeted, responsive and economically delivered to citizens

The application of Information and Communication Technology (ICT), changes the nature of government-public relationships into a technologically based relationship (Kroukamp, 2005). This impacts greatly on how the public sector conducts its business, interacts within itself, with the private sector and with the public in general. Most importantly, e-government should take into consideration societal needs, government's developmental goals and citizen empowerment (Van Dijk & Croucamp, 2007:670).

The previous chapter presented a review of literature on e-government from a global perspective. Scholarly articles and research papers in the area of e-government innovation and public service delivery were reviewed in a way to shed light on the problem and to provide a basis on which the study would be anchored.

The focus of this current chapter is on examining e-government implementation in the South African context. The chapter starts with an exploration of the South African E-government pathway, revealing e-government objectives of the country, statutory bodies mandated with governing e -government in South Africa as well as the regulatory and legislative framework that informs e-government project

implementation in public sector departments of the South African government. Further sections explain some of the previous successful and unsuccessful e-government projects that have been implemented in different South African government institutions. Current e-government innovations / projects of the country are identified and explained. The final section of this chapter highlights some of the most common challenges facing e-government implementation in the South African context as revealed by various researchers as well as in the evidence in the previously implemented projects.

## 3.2 THE SOUTH AFRICAN E-GOVERNMENT PATHWAY

Public service transformations in South Africa were kick-started in 1995 with the promulgation of the White Paper on Transformation of Public Service (WPTPS). The White Paper provided a general background for the introduction and implementation of new policies in the delivery of public services. This was immediately followed by the release of the Batho Pele White Paper in 1997, also known as the White Paper on Transformation of public service delivery (WPTPSD[14]). The essence of Batho Pele (People First) is the transformation of civil servants' ways of working from lethargic style to inclusive, participatory service which characterises democratic states (Visser & Twinomurinzi, 2008:1). Hence the Batho Pele White paper was adopted as the constitutionally mandated service delivery philosophy of the South African government, providing ethical standards that should guide civil servants in their work in all government departments.

[14] See Republic of South Africa. White Paper on Transforming Public Service Delivery (Batho Pele White Paper). In: Administration DPSA, editor.: South African Government Gazette; 1997.

Post-apartheid South Africa has launched a number of e-government initiatives in a bid to improve service delivery and redress the past imbalances created by under the previous regime. Pillay, (2012:3) expresses e-government as the utilisation of information and communication technologies (ICTs) to make information dissemination and transactions possible online or via electronic media, taking into consideration the needs of society, government's developmental goals and public/citizen empowerment (Van Dijk and Kroukamp, 2007:670). Therefore, its purpose is to improve services to the citizens. Business Connexions, (2014) suggests that if strategically implemented, e-government services can bring countless benefits both to the government and its citizens in basic service delivery and this has encouraged the South African government through its various agencies to embrace e-government as a component of its service delivery plan.

## 3.3 STATUTORY BODIES / ENABLING STRUCTURES FOR E-GOVERNMENT IMPLEMENTATION IN SOUTH AFRICA.

To show its seriousness with regards to transformation of public service delivery through use of ICTs and e-government implementation, the South African government established statutory bodies and structures to help in ensuring effective implementation of e-government projects in South Africa. Below is a description of the major structures that deal with e-government innovation in the South African public sector.

### 3.3.1 STATE INFORMATION TECHNOLOGY AGENCY (SITA)

In 1999, the State Information Technology Agency (SITA) was established as a legislative body responsible for governing implementation of e-government projects by government departments / agencies. Its function is to provide recommendations in relation to ICT related matters to government departments

as well as assisting in the transformation of the departments and agencies through ICT. SITA was mandated with the strengthening and coordination of the ICT resources of government in order to bring about improved services through e-government (Petersen, 2005:16 cited in Davids, 2011). In short, SITA is responsible for acquiring, installing, implementing and maintenance of information technology in the public sector.

### 3.3.2 GOVERNMENT INFORMATION TECHNOLOGY OFFICERS' COUNCIL (GITOC).

This statutory body is made up of National and Provincial IT officers. It was given the responsibility for the consolidation and coordination of IT initiatives including e-government in order to simplify the process of delivering public services. GITO in each department is responsible for supporting the respective department's ICT strategic plan, its strategic direction and its management plans (DPSA, 2012: iii). This should be done to enable the department to position the delivery of ICT services in line with the department's strategic goals.

The **GITO** function was established in each department to align and implement electronic service delivery with the tactical aims and management plans of the department. A representative of the GITO must be available at the strategic management level (Executive Management) of each government department.

### 3.3.3 PUBLIC SERVICE ICT MANAGEMENT (PSICTM)

In the **DPSA**, Public Service ICT Management (PSICTM) is responsible for making sure that ICT implementation makes it possible for the Public Service to improve Public Service delivery. Having realized the value and potential of e-government in impacting on service delivery improvement, the South African government placed e- government as a pillar to its service delivery strategy. As a

result, the government endorsed the Department of Public Service and Administration (DPSA) as the authority that monitors e-government implementation in the South African context. The PSICTM is a branch inside the DPSA that deals mainly with ICT-related issues in service delivery.

The (DPSA) is entrusted with the duty to develop the policies relating to e-government (DPSA, 2007a). From government's perspective, new ways of thinking about service delivery are vital for the successful launch of e-government programmes in any department (Davids, 2011). The DPSA was therefore tasked with the development of e-government policies and ensuring proper evaluation of the effectiveness if ICT in government (Farelo and Morris (2006:6). The DPSA is thus concerned about working on a plan that aims to deal with e-government issues across all departments and sectors, the aim being to overcome common problem of uncoordinated and isolated project approaches. In (2001), the DPSA produced an Information Technology (IT) Policy Framework which laid the groundwork for e-government implementation with the aim to assist in the improvement of the South African government's service delivery programme.[15]

The DPSA argues that materialization of e-government cannot happen in the absence of high quality communication infrastructure, affordable computer and mobile technology prices, cheap and fast internet, qualified staff, as well as effective customer relationship management as important ingredients to successful e-government implementation (DPSA, 2001:5). It is the perception of the DPSA through its IT Policy Framework, (2001), that initiating and evolving e-government projects calls for a well organised approach guided by a clear

[15] For more information, see Department of Public Service and Administration (DPSA). 2001. *Electronic government: The digital future, a public service IT policy framework*. [Online] available on http://www.dpsa.gov.za/egov_documents.asp.

awareness of the goals of the initiative (DPSA, 2001:6). The department further emphasizes the importance of establishing a policy framework which spells out:

i. E-government vision
ii. Benefits to be achieved
iii. Focus or priority areas for immediate attention
iv. Important pre-requisites like human resources, legislation etc
v. Recommendations on how to deliver good results for the focus areas

Thus, according to the DPSA, (2001), the starting point in the e-government drive for any government institution should be the identification of what the customer (citizen) needs and then look at how information technology can be used to achieve this economically and effectively. E-government needs to bring value to government service delivery, not just used for the sake of using it (DPSA, 2001:7).

### 3.4 WHAT ARE THE E-GOVERNMENT OBJECTIVES OF SOUTH AFRICA?

As endorsed by the Department of Public Service and Administration (DPSA, 2001) in the IT Policy Framework, the goals of e-government in South Africa are:

i. To improve internal organizational processes of government.
ii. To provide better information and service delivery
iii. To increase government transparency in order to reduce corruption
iv. To reinforce political credibility and accountability
v. To promote democratic practices through public participation and consultation.

The above e-government goals are strongly reflected in the Batho Pele principles of service delivery introduced for implementation by the Department of Public Service and Administration (DPSA) in October 1997 namely:

i. Regular consultation with customers
ii. Increased access to services
iii. Setting of service standards
iv. Provision of more and better information about services.
v. Increased openness and transparency about services
vi. Ensuring high courtesy levels
vii. Remedy for failures and mistakes
viii. Giving best possible value for money.

These principles laid the foundation for introduction of e-government in public sector management. As can be seen in the e-governance goals and Batho Pele principles above, e-government is one of the important elements that fit in well in the jigsaw puzzle of the good governance and service delivery discourse in South Africa. The practice of e-government plays a significant role in promoting transparent services, accountability, responsive service delivery, active public participation, efficient and effective use of resources, which are all characteristics of good governance (Suklabaidya & Sen, 2013; Pillay, 2012; Business Connexion,2014).

New efforts by the government to implement e-governance as a good governance and improved service delivery strategy are evident in municipalities and government departments such as the Department of Home Affairs (DHA), South African Social Security Agency (SASSA), Department of Education (DOE) and South African Revenue Services (SARS) Pillay (2012). However, Pillay, (2012) argues that though e-government has been adopted as a strategy for service delivery in South Africa, e -government projects of the country have faced both success and failure.

## 3.5 LEGISLATIVE AND REGULATORY FRAMEWORK FOR E-GOVERNMENT IN SOUTH AFRICA

The advent of information Communication Technology (ICT) has brought about reforms to aid improvement of service delivery in public sector organisations (Mutula & Kalaote, 2010:64). These reforms do help government to deliver services more efficiently while increasing public participation in matters of governance. *Nevertheless*, the benefits of ICT and e- government in particular may not be fully realized in the absence of a clear and meaningful policy and regulatory framework that should inform the e-government initiatives of any government. Guiding rules and regulations are very important in the implementation and efficiency of e-government. Putting in place legislative and regulatory frameworks helps in ensuring establishment of suitable infrastructure and secure access to e-government services by the citizens (Matavire *et al,* 2010:159; Quina, 2011:58).

Odogwu, (2014: 20) argues in favour of a regulatory framework as a requirement for any e-government implementation based on the following reasons:

- Regulation creates, limits and constrains a right,
- A regulatory framework prevents abuse of a system
- It leads to consistency of behavioural patterns of both service providers and service users.
- Through regulation, responsibilities are allocated while duties are created or limited.
- It enables government to set a standard that will benefit service providers and consumers.

- Regulatory frameworks promote order and control over service providers and users of services with regards to using a system.

In view of the above, a regulatory framework provides direction and a clear strategic plan for the implementation of e-government in a way that ensures compatibility with the goals to be achieved. It establishes an element of order and control.

A number of guiding principles have been put in place in a bid to promote an enabling environment for the implementing e-government projects in South Africa. The government has in place the following policies, standards and documents as the regulatory framework for its e-government strategy:

### 3.5.1 THE PUBLIC SERVICE ACT, 1994

This Act and its subsequent amendments form the main legislation for e-government in South Africa. The Act makes provision for the setting of norms and standards for electronic-government implementation and management of information in the public sector.

### 3.5.2 DEPARTMENT OF PUBLIC SERVICE AND ADMINISTRATION IT POLICY FRAMEWORK, (2001)

This strategy document was developed by the Department of Public Service and Administration in 2001 according to the department's constitutional directive, in support of its overall service delivery improvement programme (Davids, 2011:19). The policy framework served as a key guideline for e-government implementation in South Africa outlining the country's e-government vision and stressing expected measurable benefits of e-government as increased productivity, improved and cost effective service delivery. The framework proposes successful e-government projects underpinned by four key focus areas namely:

- Interoperability
- IT Security
- Economies of scale
- Elimination of duplication of government functions (DPSA, 2001:8)

Through the policy framework, DPSA makes the following ICT related recommendations for the South African public sector:

- That the education system be convinced to build up IT skills that address the service delivery demands of South Africa
- Potential e-government services users should have access to IT infrastructure and technology.
- That access to information technology should be extended through other local official languages in addition to English and Afrikaans. This has so far been done through the launch of the Batho Pele Gateway portal in 2004 as the e-government gateway for government institutions.

### 3.5.3 PRESIDENTIAL REVIEW COMMISSION REPORT CHAPTER 6: INFORMATION MANAGEMENT, SYSTEM AND TECHNOLOGY (IMST)[16]

The report in Chapter 6 lists the essential resources for e-government implementation as human resources, infrastructure and information. It further provides a clear analysis of government's Information Systems (IS), Information Management (IM) and Information Technology (IT) as well as the challenges faced by the commission with regards to Information Management Systems

[16] For more details see Department of Public Service and Administration (DPSA). 2007c. *Presidential Review Commission Report, Chapter 6: Information management, systems and technology*. Available http://www.dpsa.gov.za/documents/ogcio/2007/presidential%20/Review%20Commission-CHAPTER%206.pdf

(IMST) with recommendations offered to overcome identified obstacles (DPSA, 2007c:1)

### 3.5.4 HANDBOOK ON MINIMUM INTEROPERABILITY STANDARDS (MIOS)

Produced by the DPSA in 2004, the handbook provides guidelines adopted by the government in line with international trends in e-government. The handbook provides an overview of technical standards as well as policies for e-government strategy in South Africa. The set standards aim to enhance accessibility of government services to the general public and other stakeholders in addition to the flow of information across public sector departments, with a clear specification of standards used for minimum e-governance (DPSA, 2007:2; DPSA, 2004[17])

### 3.5.5 PUBLIC SERVICE REGULATIONS (PSR, 2001 AND 2002) AS AMENDED UP TO 2006.

Part III: E of the PSR (2001) as amended in RSA, 2006, points out the responsibilities of departmental heads of developing electronic communication and operational plans for ICT implementation in service delivery. The significance of e-government for economic and responsive service delivery, interoperability, information security as well as e-government regulations is described and emphasized in Chapter 5, Part I-III of the PSR, (2002) as amended up to 2006.

### 3.5.6 MINIMUM INFORMATION SECURITY STANDARDS (MISS)

This document prescribes information security measure and how they should be applied with respect to classified documents. It replaces the previous Guidelines for The Protection of Classified information. The security standards provide guidelines on who has access to what information as well as on the proper

[17] Department of Public Service and Administration (DPSA). 2004. *Minimum information security standards*. [Online] available http://dpsa.gov.za/egov_documents.asp

transmission and storage of classified documents. They also give clarity on the management of documents stored on computers and wrap up with a full chapter on information security breaches (DPSA: 63)

### 3.5.7 STATE INFORMATION TECHNOLOGY AGENCY ACT NO 58 OF 1998 AS AMENDED BY THE ACT 38 0F 2002

This piece of legislation was enacted to standardise the e-services in the South African public sector. The Act makes SITA the authority for government ICT services, (see Section 7) and gives the agency the responsibility for providing secure wide area network that enables interdepartmental interactions, interactions with citizens as well as businesses. RSA, 2002:1). Hence, the Act was put in place in respect of e-government in South Africa.

### 3.5.8 ELECTRONIC COMMUNICATIONS AND TRANSACTIONS ACT NO 25 OF 2002 AS AMENDED BY THE CONSUMER PROTECTION ACT 68 OF 2008[18]

The Act was enacted to facilitate and regulate electronic communications and transactions, develop a national e-government strategy for South Africa, to promote access by everyone to electronic communication and transaction. Furthermore, it makes provisions for making and receiving payments electronically as well as the issuing of licenses or permits electronically. It also makes provision for the development of human resources in electronic transactions as well as preventing the misuse of information systems by users. The Act encourages the use of electronic means to give services to the citizenry.

### 3.5.9 PROTECTION OF INFORMATION BILL, 2010

Published on 5 March 2010, the Bill replaces the Protection of Information Act, 1982. It was developed with the main goal of ensuring consistency in the

[18] see the Electronic Communications and Transactions Act 25 of 2002 on www.up.ac.za>media>shared>ZP_Files

protection, classification and declassification of state information and to ensure that state information is protected from destruction, loss or illegal disclosure. Thus, the bill shows the South African government's effort to regulate and safeguard information

### 3.5.10 ELECTRONIC COMMUNICATIONS AMENDMENT ACT 1 OF 2014

It is a recent amendment of the Electronic Communications Act No 36 of 2005. The Act provides for the establishment by the Minister of Communication, of an advisory council that that advices the Minister on development and implementation of broadband policy. It also sets further condition for the provision of internet services to schools and other social services institutions at a discounted rate.

### 3.5.11 CORPORATE GOVERNANCE OF ICT POLICY FRAMEWORK (CGICTPF, 2012)

This framework was developed by DPSA in collaboration with GITOC in 2012. Its purpose is to establish corporate governance and governance of ICT as fundamental elements of corporate governance in each and every government department. The framework builds upon the IT Policy Framework, (2001) and provides a collection of guiding principles and practices as well as approaches to e-government implementation to be complied with by government departments. This framework applies to all spheres of government. The framework further makes provisions that make GITO to be an essential part of the Executive Management of each government department.

## 3.6 THE SOUTH AFRICAN E-GOVERNMENT SUPPORT PILLARS

According to the DPSA, (2001) and DPSA, (2012), which are both e-government policy frameworks of South Africa, e- government initiative success depends

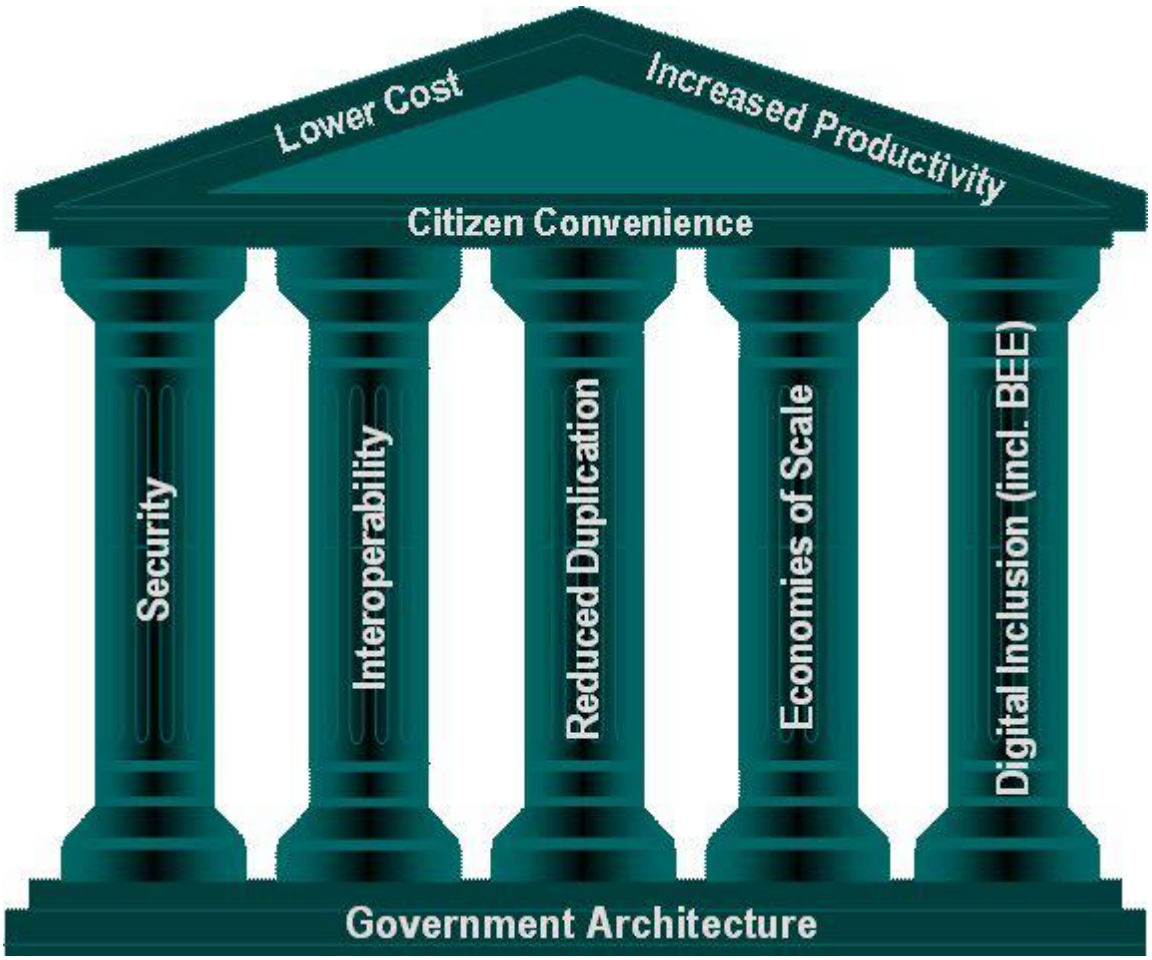


**Figure: 5 ICT house of value:**

Source: Department of Public Service and Administration, 2001. *Electronic Government the Digital Future: A Public Service IT Policy Framework.*

upon five primary focus areas. ICT and e-government value cannot be fully realised without fully addressing the identified focus areas. The focus areas which are the e-government support pillars are illustrated in the figure below and each of the pillars is briefly described.

### 3.6.1 INFORMATION TECHNOLOGY (IT) SECURITY

An e-government initiative has to promote a web environment that is capable of protecting both electronic data and IT systems from unauthourised access and

cybercrime activities (DPSA, 2001:7). Lack of assurance of such security may make people to grow cold feet when it comes to use of online services.

### 3.6.2 INTEROPERABILITY

E-government initiatives should focus on the integration of government IT systems, thus allowing sharing and exchange of electronic messages and data as well as seamless transactions among other services through enablement of “whole of government” search and queries. In other words, e-government should strive to enable IT systems of all government agencies to ‘talk to each other’ (DPSA, 2001)

### 3.6.3 REDUCED DUPLICATION

Through implementation of e-government initiatives, government agencies and officials should aim to reduce or avoid unnecessary duplication of functions through proper streamlining of processes and intra-governmental sharing of information (DPSA, 2001; DPSA, 2012). Thus, the collection of similar information that is useful across different government departments/ service providers more than once has to be dealt away with through a shared database of such information.

### 3.6.4 ECONOMIES OF SCALE

For successful e-government, there is need for the development of IT skills that are vital to e-government strategie in order to minimise costs associated with hiring external IT skilled personnel. The DPSA IT policy framework further recommends that research be directed towards responding to service delivery matters through the use of advanced techniques that are cost-effective, efficient and provide speedy / timely services.

### 3.6.5 DIGITAL INCLUSION

The DPSA, (2012) in its Corporate Governance of ICT Policy Framework (CGICTPF, 2012) adds the digital inclusion pillar to the original four pillars identified in the DPSA, (2001) framework. It is argued in this framework that successful e-government cannot be achieved without ensuring that people are empowered through information and communication technologies (digital inclusion). Hence people need to have the right access, skills motivation and trust to confidently do online interactions and transactions. Thus, Naidoo, (2007; 324) argues that effectively bringing e-services to the citizens is a challenging process especially in a country where most people lack proper infrastructure and resources worsened by inequalities in access to technology. It thus calls for more creative ways of extending e-services to remote rural areas through development of user-friendly connection mechanisms like mobile internet, internet kiosks, Wi-Fi hotspots, fibre internet etc to facilitate online interaction. To try and encourage more digital inclusion for the South African community, the Electronic Communications Amendment Act 1 of 2014 made provisions for the discounted rate of internet service provision to public healthcare centers, schools and other educational institutions. The next section zooms in to briefly outline the Gauteng Provincial Government's focus on e-government development as this is the province in which the study was carried out.

## 3.7 The Gauteng City Region (GCR) E-government Strategy

The Gauteng provincial government through the GCR took a further step in establishing a five-year e-government strategy covering the period 2015-2020. The purpose of the strategy is to ensure connectedness amongst government, citizens and business; increase collaboration and facilitate interaction with

government.[19] A notable e-government implementation of the Gauteng Provincial Government is the launch of the Ntirhisano service delivery War Room explained in section 3.8 below.

### 3.7.1 GCR E-government Vision and Mission

**VISION**

To be a connected government that leverages emerging digital technologies in a collaboration between government, citizens and the private sector that enable effective service delivery and governance.

**MISSION**

To realise the intent of a connected government through the provision of relevant technologies, standards and governance to create an environment of collaboration between key stakeholders that facilitates the evolution of the Gauteng City Region's service delivery

### 3.7.2 Legislative and Regulatory Environment

The GCR e-government strategy is guided by the following frameworks namely:

- SITA Act, 1998
- Electronic Communication & Transactions Act, 2002
- POPI Act, 2023
- CGICTPF
- FOSS Policy.

[19] For more information see "GCR e-Government Strategy 2015-2020. Available at: http://www.egov.gpg.gov.za/Presentations/GCR%20eGovernment%20Strategy%202015-2020%20Sep%202015%20(Full%20Version).pdf

In particular this strategy supports the realisation of the modernisation of the public service by:

- Rolling out of the Broad Band Network to make internet services available to all the citizenry of GCR
- Transforming the back office functions within the GCR
- Increasing the access channels for public services
- Standardisation and using common platforms
- Eliminating duplication
- Ensuring interoperability between systems
- Giving the GCR citizenry services in their most preferred ways

The establishment of the five-year strategy led to the establishment of the Department of E-government[20] on 30 September 2015, showing the provincial government's commitment to improvement of public services through the use of e-services. The mandate of this department is to implement the e-government strategy of the Gauteng City Region (i.e. Gauteng Provincial Departments, Cities and Districts) through consolidating back-end systems and processes to bring about better frontline service delivery to the people. The aim is to make people access public services online thus reducing frequent visits by citizens to government offices.

### 3.7.3 What are the GCR e-government pillars?

In order to achieve its e-government vision and mission, the GCR adopted five pillars of e-government support in Table 3.1 below;

[20] For more information see article "Gauteng Government establishes Department of E-government. 30 September 2015. Available at: http://www.gov.za/speeches/gauteng-announces-department-e-government-30-sep-2015-0000

**Table 3.1: The Gauteng City Region E-government Pillars**

| E-government Pillars | Strategic Objectives |
|---|---|
| **Pillar 1: Enabling ICT Infrastructure** | To build an enabling ICT infrastructure for the GCR connected government |
| **Pillar 2: Enabling Platform** | To create the enabling platform and support services to enable GCR entities to design, develop and deliver e-Government Services |
| **Pillar 3: Governance Structures** | To establish a GCR e-Government governance structure to drive priorities, policies, standards and regulations |
| **Pillar 4: Usage of e-Government Services** | To promote use of e-Government services among Citizens, Businesses and Government Entities |
| **Pillar 5: ICT Industry Stimulation** | To stimulate the ICT economy through facilitating incubation and innovation as well as encouraging public private partnerships for the development and roll-out of e-Government services |

*Adapted from the GCR E-government Strategy 2015-2020*

The GCR e-government strategy places emphasis on the modernisation pillar of the Ten Pillar Programme for the Fifth Administration of South Africa. Hence all government departments in the province are expected to recognise the importance of modernising public service delivery through effective use of electronic technology to offer more services online. In particular this strategy supports the realisation of the modernisation of the public service by:

- Rolling out of the Broad Band Network to make services available to all citizenry of GCR
- Transforming the back office functions within the GCR

- Increasing the access channels for public services
- Standardisation and using common platforms
- Eliminating duplication
- Ensuring interoperability between systems
- Giving the GCR citizenry services in their most preferred ways

The newly introduced online application and learner admission system is evidence that the Gauteng Department of Education has taken heed to the call by the GCR to implement the Gauteng City Region's five year e-government strategy, with the focus on modernising the educational services through the use of e-services in educational service delivery in the Gauteng province.

## 3.8 PREVIOUS AND CURRENT E-GOVERNMENT PROJECT IMPLEMENTATIONS IN SOUTH AFRICA

Though literature on e-government effectiveness in developing states is littered with failure stories, most governments in developing countries, South Africa included, have not been stopped from turning to ICT as the favoured means of delivering citizen-centred services (Visser & Twinomurinzi, 2008:36). The implementation of e-government initiatives by the South African government has been taking place in various government agencies over the past decade, with the aim of improving its responsiveness to service delivery (Davids, 2011:19). South Africa's e-government focus is mainly on Government to Citizen (G2C), Government to Business (G2B) and government to Government (G2G) activities and the government is striving to build e-government awareness as well as taking a move towards achieving a single gateway to government services and through the Batho Pele Gateway (www.gov.za) to facilitate improved service delivery (DOC, 2015). Although South Africa has been ranked second after Mauritius in

terms of e-government standing in the African continent (UN E-government Survey, 2010), not all departments have fully adopted the e-government concept, rather it is being adopted at an incremental but slow pace (Nkomo, 2012). Below are some of the e-government programmes that have so far been carried out in South Africa.

### 3.8.1 E-FILING

This initiative has been underway for more than ten years in the South African Revenue Services (SARS). In the e-government evolution, this initiative shows the e-government maturity level in the SARS department to be on the transactional level. The initiative was introduced in 2001 in accordance with the public service e-government strategy. E-filing is a coordinated attempt by SARS, private businesses as well as individuals to facilitate electronic submission of tax returns as well as online payments by taxpayers. This system applies for those registered for e-filing; however traditional manual submissions at tax offices are still possible. The e-filing system comes handy in that it has helped reduce the long queues at tax offices and allows for convenient tax filing at any time and any place. Prompt responses to taxpayers' enquiries are also made possible. This system compares well with Japan's National Tax Agency's e-tax initiative.

The system does come with benefits for taxpayers and SARS itself as a service provider (Pillay, 2012; DOC, 2015). Processing time for tax returns is much quicker with immediate response given to taxpayer on submission of the tax return. The system reduces the possibility of losing tax return forms and supporting documentation which is common through online submission of returns. The South African Revenue Service (SARS) has successfully introduced an electronic tax filing system, enabling tax payers to submit their tax returns

electronically, thus saving effort, time and money required where one has to physically queue for services at tax offices to manually complete and submit forms. A further e-service offered by SARS is in the form of online help for its clients for any tax related issues.

The agency benefits from reduction in paperwork, postal fees, and turnaround time for enquiries and responses. Delays in correspondence are minimized while increased accuracy and management of taxpayers' data is ensured. The e-filing system also holds a competitive advantage for tax practitioners over those using the traditional paper format as more customers can be helped by one person (Pillay, 2012). Cashiers have also gotten the relief from having to risk being robbed as new convenient payment methods have been put in place. At present no payments are done at the tax office but rather through EFT or online banking. The author however argues that in such a case e-government thus did cost some cashiers their positions as this system may have replaced their duties.

On the other hand, benefits of the system to customers include greater flexibility in interaction with SARS since they can use email, short messages via the SARS portal as well as call centre. There are also reduced errors as taxpayers no longer make handwritten mistakes due -to online capturing of their information. Another advantage is in the more convenient payment methods that include EFT and online banking as compared to the old system that required bank deposits and faxing of deposit slips as proof of payment, thus a tiresome process which resulted in many taxpayers ignoring the need to file their tax returns (Davids, 2011; Pillay, 2012). A fully supportive call centre established for handling any

customer queries has reduced the need for people to travel to tax offices to make enquiries.

### 3.8.2 GOLOGANANG PROJECT

Gologanang (coming together) project was an attempt by the South African government to bring computer technology to public servants. It was a joint initiative with HP a private sector to provide public servants with affordable computer bundle consisting of multi-media system, operating system, software and free installations. Announced in May 2002, the project was intended to be accessible to all 1.1 million government employees on a sliding scale of subsidies down to the lowest paid civil servant (Levin, 2002:2). The then Minister of Public Service, Geraldine Fraser-Moleketi mentioned the project as government's effort towards dealing with inequalities in access to technology, with the hope to significantly reduce digital illiteracy among public servants which would in return significantly improve utilization of ICT in the execution of their duties and subsequently promote better service delivery (Ibid).

This project was however reported in November 2002 as a total failure. Although there were good intentions in the project, the private partner in the project (HP), later insisted on a guarantee of R700million from government for risk management in order for the project to go ahead. This is something that was not presented by DPSA and SITA to cabinet in the project proposal. Thus failure was due to the fact that financial aspects and risk management factors were not thoroughly addressed in the planning stage, leading to the cancellation of the project before take - off.

### 3.8.3 HOME AFFAIRS - "WHO AM I ONLINE" PROJECT

As a brainchild of the Department of Home Affairs (DHA), the project was awarded to Gijima AST in 2008 with the expected delivery date for the project as 2010 (Pillay, 2012:34). The aim of the project was to replace the DHA's redundant systems and to improve security. The intention was to integrate with the Automated Fingerprint Identification System (AFIS) and to allow for the future integration of with the smartcard technologies. Due to non-delivery, the project was cancelled by DHA in 2010 with claims of irregularities having been made by SITA the body responsible for ICT use in government. Such irregularities include conflict of interests by those involved in the roll out of the project, among other issues. There was also a battle between DHA and Gijima over the legality of the contract.

The dispute was however resolved in 2011 January with the renaming of the project to Information Systems Modernisation Project. In the medium term, the project focus was to implement some of the following aspects according to Mawson, (2012):

- enabling live capturing of identity documents and passports
- Maintenance of the national population register
- Integration of civics and immigration systems
- Launching of the movement control system to 38 remaining ports of entry that were not that were not covered in the run up to the Fifa World Cup
- Piloting of the smart ID card

Despite having failed in its first implementation, the revitalized Information Systems Modernisation Project has proven to be a success story in the e-government evolution in the Department of Home Affairs. The system of control at border entries has been successfully implemented at almost all points of entry into South Africa which has helped reduce unauthorised entry and problems of illegal immigrants. The rollout of the live capturing of ID cards and smart ID cards is another current success story in the department showing the effectiveness of e-government in service delivery

### 3.8.4 GAUTENG ONLINE

This is a single entry point to the Gauteng provincial government websites. This portal makes interaction between the various government departments at provincial level possible. This one stop entry provides links to each government department from one interface. Accessing government departments' information becomes easy with a one stop government entry.

### 3.8.5 E- EDUCATION

Efforts at bringing e-government to the education sector started as early as 1996 with the initiation of the Education Network (EduNet) under the provisions of the Telecommunications Act No 103 of 1995 (DOC, 2015). The Department of Communication (DOC), provided computer and internet services to under-serviced areas through the launch of the e-school Cyber lab programme in 2000. The Telecommunications Amendment Act of 64 of 2001 later brought in a discounted e-rate to smooth the progress of internet connections in educational institutions. This was followed by the 2004 White Paper on e-Education which confirmed that subsidies were available for discounted e-rates achievement as well as emphasised the importance of integration ICT into learning and teaching.

The cyber lab project became a full responsibility of the Department of Education (DoE) in 2010 with the electronic-policy goal of making every South African teacher, manager and learner ICT capable by the year 2013. This has proven to be a successful project that has seen many schools being connected to the internet and having direct and immediate interactions with the district as well as head offices online, thus improving the use of e-government as well as preparing learners for the digital world.

### 3.8.6 THUSONG SERVICE CENTRES.

Formerly known as Multi-purpose Community Centres (MPCCs) the service centres were initiated in 1999 by the Government Communications Information Service (GCIS). Thusong Service centres are a component of government's broad Access Strategy, intended to drive the delivery of basic and vital services to the citizens, especially those from most disadvantaged and deprived communities[21]. The centres are pivotal in addressing service delivery challenges by motivating efforts towards closing socio-economic gaps between the rich and the poor with regards to information and services. Thus they reflect an information and communications approach to service delivery. They serve as one stop public development centres meant to empower all citizens through access to information, services and resources[22]. This has been a move by the government to address the digital divide challenge in offering e-services to the citizens.

[21] dpsa, "*An Analysis of South African Approaches to Service Delivery Improvement Strategies*", a paper prepared for the IBSA Working Group on Public Administration, June 2007

[22] GCIS, Published business plan of the first generation roll-out of Thusong Service Centres. "Executive summary" In "*Nissc Mpcc Business Plan",* Pretoria, 2001. p41.

### 3.8.7 BATHO PELE GATEWAY PROJECT

This programme was launched on 3 August 2004, based on the Batho Pele Principles, the South African Service delivery philosophy. The Batho Pele Gateway Programme is government's effort to modernise the public service to be more responsive to the needs of the citizens. It was established with the focus on arranging services around human life events- from death to birth through the use of various modes to make government services accessible to all.[23] According to Mandla Ngcobo of the DPSA, in his article "Batho Pele Gateway Project", the aim of the programme is to ensure accessibility of government information and services to all conveniently in all official languages of South Africa. It also was established to ensure 24/7 availability of information at any time and place through various channels like call centres and the government portal itself (www.gov.za). Hence the project has four deliverables namely:

- Call centre available 24/7 accessed through dialling 1020
- A Batho Pele Gateway portal which allows content upload in all 11 official languages. All links to government departments are accessible on this portal.
- A directory of government services
- Intermediaries for services

The opportunities created by this BPG programme include the following:

- Choice of service delivery channels by customers;
- Services from different agencies or jurisdictions are grouped for the convenience of customers;

[23] DPSA, Batho Pele Project. Accessible on www.dpsa.gov.za>Mandla Ngcobo

- Consistent customer service experience in all channels used;
- Customer contact history is available to all channels;
- Transactional services involve interfaces with databases in multiple agencies rather than duplication of client information by different agencies.

### 3.8.8 THE SASSA ELECTRONIC REGISTRATION AND PAYMENT SYSTEM

The South African Social Security Agency (SASSA) has taken an e-government initiative of ensuring that all social assistance beneficiaries for various social grants in the increase in social; grant recipients over the past two decades has seen the need to change ways in which beneficiaries are registered, from manual to electronic processing of applications. Beneficiaries are registered electronically in a bid to reduce the problem of duplicated registrations and other errors.

According to the Minister of Social Development, Ms Bathabile Dlamini, a new biometric system of social grant payment was introduced in April, 2012 as an e-government initiative aimed to address challenges faced by SASSA, which include fragmentation of the payment system, long queues at pay points, high fraud levels in the payment of grants among other challenges (SASSA, 2014 15 Annual Performance Plan). This resulted in the improvement of beneficiaries' experience of services through accessibility of various payment channels that include point of sale, automated banking facility, retail merchants as well as cash pay points (Ibid). by the year 2013, at least 10 million branded biometric payment cards had been given to grant recipients. This e-government initiative of biometric registrations and payments has worked in support of the Agency's mandate of "paying the right grant, to the right person, at the right time and place".

### 3.8.9 THE WESTERN CAPE PROVINCIAL INITIATIVE (WCPI)

One of the most important e-government projects in South Africa is the Western Cape Provincial Initiative (WCPI) with its various government sanctioned projects that have undergone different degrees of implementation. Vosloo & Van Belle, (2005), cited in Matavire *et al (*2010:154) posit that the Western Cape government has won noteworthy public recognition due to the diversity, vision and success of its e-government initiatives. Some of the projects / initiatives include:

- Cape Gateway project
- Cape Information Technology initiative
- Rural tele-centres
- Schoolnet South Africa project,
- Khanya project
- Mindset Network project

It is notable that some provincial governments have started adopting and replicating some of the initiatives spearheaded by the Western Cape government in order to promote service delivery improvements to their customers. The Gauteng Department of Education is one such department in Gauteng provincial government that has realized the importance of utilization of ICT through its online learner admissions among other initiatives.

## 3.9 CHALLENGES OF E-GOVERNMENT IMPLEMENTATION IN SOUTH AFRICA

E-government -government adoption and implementation has not come as a walk in the park for the South African government. It sometimes faces great hurdles that lead sometimes to failure of what initially were perceived to be advantageous projects. Safeena & Kammani, (2013:14) argue that potential blocks for e-

government depend usually on the characteristics of the particular area government in which the initiative is to be implemented. This is supported by ITU, (2008:27) who posit that governments need to understand the local contexts in which any e-government initiative will be usedJust like many other countries that have gone the e-government way, South Africa has had a fair share of challenges in its attempts to implement various e-government projects. In their study of Challenges of e -government implementation in the South African context, Matavire *et al, (*2010:158-160) observed that e-government implementation challenges in South Africa include challenges in leadership structure, lack of leadership continuity, project fragmentation as well as low appreciation of perceived IT value by service providers. Below is a brief discussion of some of the identified challenges in the South African context by the above authors:

**LEADERSHIP STRUCTURE CHALLENGES**

Traditional hierarchical departments tend to create layers of abstraction between technology implementers and organisation leaders, leading to desensitisation of leaders from the needs of the general populace (Matavire *et al*, 2010: 158). Weaknesses in the upward and downward communication chain between leaders and subordinates thus often have a bearing on the successful implementation of e-government initiatives.

**LACK OF LEADERSHIP CONTINUITY**

The continuity of project leadership greatly impacts the outcome of any e-government project. It is argued by the above authors that some projects did not reach the expected success levels due to the fact that project leaders were

sometimes changed within a project cycle. The perceptions of leaders on the value of e-government vary form leader to leader. Therefore, where leaders are often changed within a project cycle, projects usually failed to yield the originally expected results since a replacing leader might not have a similar attitude, vision and passion for a specific e-government to that of the original leader.

**PROJECT FRAGMENTATION**

It was also found out in the study that most e-government projects in most government departments were financially, legislatively and service fragmented (Matavire *et al*, 2010:158). This fragmentation has had an undesirable effect on the success of their e-government project implementations. Due to isolation of projects, fragmentation led to duplication of information and services by different department, leading to wastage in resources as interchangeability of roles and services across departments was thus limited between projects. Service duplication across departments thus culminates into resource wastage.

**LITTLE APPRECIATION OF PERCEIVED INFORMATION TECHNOLOGY VALUE**

While it is often assumed that society at large is mostly unaware of IT value, Matavire *et al*, (2010) observed that in some cases service providers lack awareness of the potential e-government benefits. Rather, they perceive it more as a cost to be avoided. To some ICT is seen as a support service instead of as a tactical value addition utility for the organisation. In such situations, staffing needs for e-government initiatives are often sidelined in favour of activities directly involved with basic services like housing development. The result observed by

the authors is limitation in the funding of e-government initiatives within departments which is a big challenge to e-government success.

**LACK OF CITIZEN INCLUSION**

One respondent in Matavire *et al*, (2010) study had this to say about e-government project implementation in South Africa;

> *"Service providers tend to think that the delivery of services is important, but communicating about it, how to do it is probably more important"*

According to this respondent, one challenge of e-government implementation is that citizen inclusion is generally undertaken only at the service delivery stage. Thus, e-government projects suffer from poor citizen utilization as observed by Sarmad & Hamid, (2009) about e-government in most third-world countries, including South Africa. The lack of citizen involvement throughout the e-government planning and implementation processes thus leads to inadequate capturing of the citizens' true needs thereby ending up with initiatives that held little to no value for the communities for which they were initiated.

Naidoo, (2007:324) and Farelo & Moris, (2006:6) also argue that bringing e-government to South Africans is a challenging process considering the obstacles of poor infrastructure, lack of suitable resources and imbalances in access to technology affecting many people. Thus the authors have highlighted lack of sufficient resources, (financial, human, material), access to technology and lack of supportive infrastructure as some of the key obstacles to successful implementation of e-government projects. High level of technical and technological know-how required for successful project implementation is usually

missing in most organisations trying to take the e-government route. This argument strongly agrees with Gokmen, (2010:30) who points out the need for service providers to provide infrastructure that enhances e-government transformation on the service provider's side while on the user side, inequalities in terms of access to e-government services due to digital divide among different population groups greatly hampers the e-government processes.

Mphidi, (2009:6-7) also explains in detail challenges facing e-government implementation in the South African context. Below is a summary of the challenges identified:

- Economic disparities – where most underprivileged people have little to no access to electronic services
- Disparities between highly educated and those without good formal education, with a big number of the South Africans falling under the less literate. Hence, those with higher level of education tend to be the most users of internet services.
- Security concerns- many people in the country feel insecure to use electronic services for fear of losing their information and sometimes money to cyber-criminals

Accessibility to the internet has also been observed as a major obstacle to effective use of e-government services in South Africa (Farello & Moris, 2001; Matavire et al, 2010, Mphidi, 2009). However, according to Wikipedia, (2016)[24] there has been a marked increase in the internet user base between year 2000 & 2012 in South Africa. The increase is illustrated in the table below:

[24]See www.wikipedia.org>wiki>internet_in_south_africa

**Table 3.3: Internet penetration as percentage of internet users inSouth Africa**

| YEAR | NUMBER OF INTERNET USERS IN MILLIONS | % OF INTERNET PENETRATION |
|---|---|---|
| 2000 | 2.4 | 5.9 |
| 2008 | 5 | 11 |
| 2012 | 12.3 | 34 |

**Source:** *Adapted from Wikipedia, (2016)*

Although by 2012 South Africa had the internet penetration of 12.3 million of the total population, about 34%, that figure shows that not many had internet access as this is below half of the population. According to Wikipedia, (2016) the number of subscribers for fixed line broadband and wireless broadband which were 1.1 million and 12.7million respectively by 2013, still show very small portion of the total South African population with internet access.

Access to internet is also limited among most citizens because of the exorbitant cost of internet connectivity in the country. When it comes to broadband pricing relative to developed countries, South Africa internet rates rank among the most expensive in the world (mybroadband, 2015[25]). Although ASDL prices have been decreasing lately in South Africa due to competition with mobile network operators, the prices are still relatively high for the ordinary citizen. The "Data Must Fall" campaign in South Africa in November 2016 is evidence that South Africans cannot afford the high cost of both broadband and mobile internet.

[25] See www.mybroadband.co.za>news>119516_south_africans_are_getting_nailed_over_broadband_prices.html

Access problems as part of the digital divide challenge are further outlined by Van Dijk & Hacker, (2003) in Matavire *et al*, (2010) as mental access (lack of know-how), skills access (lack of skills / skilled personnel for effective ICT use) as well as material access (lack of access to the technology by users of e-services). Lesame (2005:197-198) further presents the following challenges that are faced in the implementation of e-government in South Africa:

(i.) The need for technically skilled persons to manage and maintain the technology in government sectors amid strained financial and energy resources to maintain the infrastructure of the country hence it is very important that South Africa enhances its technical skills to enhance service delivery.

(ii) There are eleven official languages in South Africa and it is therefore essential that services be delivered in the language of the service user since the country is also characterised by high levels of illiteracy

(iii) ICT equipment remains generally unaffordable for the majority of South African citizens. This can pose a challenge as organisations tend not to purchase ICT equipment due to its high cost, thus, delaying the implementation of e-government;

(iv) Less than 5% of South African citizens have access to either a computer or the internet, making it essential that South Africa addresses the need for e-readiness as well as this digital divide of its citizens to avoid their possible digital exclusion.

Some of the above challenges are however, already being addressed by the South African government. For instance, the issue of the use of the eleven official languages in service delivery has been attended to in the Batho Pele Gateway Project. The establishment of Thusong Service Centres aims to address the problem of unequal access to the internet and the Cyber lab School Project is government's effort at improving computer literacy levels of the citizens and preparing them to use e-services from a young age.

## 3.10 CHAPTER SUMMARY

The main objective of this chapter was to analyse e-government implementation in the South African context. The researcher is of the opinion that South Africa is not lagging behind in the e-government discourse with regards to public sector delivery. For the past decade the South African public sector under the guidance of the Department of Public Service and Administration (DPSA), has witnessed an increase in the number of e-government initiatives in its various government department. Various legislative and regulatory frameworks have been enacted by the government to enhance e-government development guided by the Batho Pele (People First), the South African service delivery philosophy. Such frameworks include the Public Service Act 1994, DPSA IT Policy Framework 2001, Minimum Interoperability Standards (MIOS), Public Service Regulations 2001 as amended in 2006, SITA Act 58 of 1998, SITA Amendment Act 38 of 2002, Electronic Communication Act 25 of 2002, Protection of Information Bill 2010, Electronic Communication Amendment Act 1 of 2014 and the Corporate Governance of ICT Policy Framework (CGICTF, 2012).

Three statutory bodies have also been established that enable e-government implementation in South Africa to happen. The regulatory bodies are the State

Information Technology Agency (SITA), the Government Information Technology Officers' Council (GITOC), African e-government structure is supported by five pillars/ focus areas namely interoperability, elimination of duplication, Economies of Scale, Information Technology (IT) Security and Digital Inclusion. Realization of IT value (improved service delivery, improved productivity, cost effectiveness) by government departments is dependent upon satisfaction of these five focus area. Through e-government implementation, the South African public sector thus aims to improve internal organizational processes of government departments, provide better government information and services, increase government transparency as well as the promotion of democratic practices through effective citizen inclusion and participation.

There is evidence of e-government implementation by some (not all) public sector departments in South Africa. Some of the e-government initiatives of the country include the SARS e-filing, e-education, Batho Pele Gateway Programme, SASSA Electronic Registration and Payment, Home Affairs "Who am I online?", the Gologanang Project, among other projects.

E-government implementation has not been a walk in the park in South Africa. Effective implementation of e-government projects faces quite a number of obstacles. The digital divide is a major obstacle, where there is a wide disparity between the rural and urban communities, the haves and have-nots and the literate and illiterate in terms of access to technology as well as digital literacy. Other obstacles include high costs of internet, lack of citizen inclusion in the e-government planning processes, leadership related challenges, fragmented projects and a low appreciation of perceived IT value by some service providers /

government departments. Added to these challenges also, are issues of lack of sufficient resources, inadequate supportive infrastructure, lack of expected technical expertise to effectively manage and use electronic services as well as security concerns by the expected users of electronic services which results in many fearing to make use of the system. However, despite these obstacles, it is worth mentioning that e-government development in the South African public sector is improving with more departments paying attention to the need to include electronic delivery of services. Although some initiatives have failed to really materialise into the expected outcomes, for instance the Gologanang (coming together) project, others like the e-filing system, SASSA electronic registrations and the Home Affairs Information Systems Modernisation Project to mention a few, have proven to have positively influenced service delivery positively in the various departments they were implemented.

The use of e-government as a service delivery promotion strategy will definitely support government's service improvement ideology, Batho Pele, thus putting people first. However, ICT has the potential to put people first only if the use of ICT is supported by both service providers and service users. For e-government to be effective, all e-government initiatives in South Africa should be integrated to avoid problems caused by fragmentation of projects. In the next chapter, a description is given of the research design and methodology followed in this study.

# CHAPTER 4: RESEARCH METHODOLOGY AND DESIGN

## 4.1 INTRODUCTION

Research is a process of generating scientific knowledge in a particular field of study through the use of objective methods and procedures (Kruger & Mitchel, 2005:2). Irrespective of the type of research field, there are always underlining philosophical assumptions about what constitutes valid research and which methods are appropriate for the generation and development of anticipated knowledge. It is of utmost importance that any researcher should understand these philosophical assumptions before undertaking any form of research.

The previous chapter was an analysis of e-government implementation in the South African context, in which the regulatory bodies and legislative framework for e-government implementation was identified. Past and current e-government project implementations in of the South African government were also discussed while the challenges to some of the e-government project implementations were highlighted.

The purpose of this current chapter is to elaborate on the research design / strategy and methodology followed in this study of the GDE online applications, including the sampling procedures, instruments used for data collection, data collection procedures as well as analysis methods and processes involved.

## 4.2 RESEARCH DESIGN

An effective research study is dependent upon the use of appropriate data collection methods within a clear research design. People often mistake a research design with the gathering of information, documenting facts or rummaging for information (Leedy & Ormrod, 2001) which is not the case. A research design is a blueprint or plan of how a researcher intends to carry out

research (Mouton, 2001: 74). In other words, a research design depicts a framework that guides researchers with an idea of what to include in a research study, how to conduct the research and the type of inferences expected based on collected data. Research is a systematic process that clearly defines research objectives, manages collected data and communicates findings, all this happening within established frameworks and in accordance with existing guidelines (Williams, 2007:66). Therefore, a research design is an outline of the general research approach or strategy that acts as an overall guide to conducting of research work.

For this study, a case study approach was used to conduct the research. A case study of the Sedibeng West District public schools and education office was used to conduct this research. Four schools and the education office in this district were chosen for this study due to their proximity to the researcher. They were also chosen because they represent schools in both township and urban schools that are both affected by the implementation of the new application system. Schools namely Emfuleni Primary, Noerdhook Primary, Carel De Wet Secondary and Tsolo Secondary schools were thus selected to fairly represent urban and non-urban applicants in the study.

According to Young, (1975), a case study allows exploration and analysis of the life of a social unit where inferences from such a study may be applied to other units from similar backgrounds. The case study conceptual and empirical inquiry thus investigates a phenomenon within its real life context. The case study is therefore an intensive study through which one can know precisely the factors and causes of a particular phenomenon. Hence, Young (1975) further explains a

case study as a method of investigating and analyzing the life of a social unit, which can be a person, a family, institution, cultural group or even an entire community. It thoroughly studies the unit, dealing intensively with its every aspect.

The choice of a case study was justified by the fact that there is a significant number of public schools and education offices in the Gauteng province. Attempting to study the implementation of the online application system in the whole Gauteng Province would require a lot of time and resources which were both not available for the researcher. Hence studying implementation of the online system within one district would help provide insight into the scenario in other areas and recommendations can be made for effective public service delivery based on the findings of the study.

Maree, ( 2007:70) maintains that a research design is a plan that moves from the underlying philosophical assumptions to specifications on respondent selection, data gathering techniques and data analysis to be conducted. The clarity of a research design, therefore, enables a researcher to know how to approach a certain research topic and guides in the selection of the correct methodology and research instruments for effective collection of relevant data for the study. The next section provides an overview of the research methodology of this study as well as the various instruments used to gather data for the study.

### 4.3 RESEARCH METHODOLOGY

The study engaged a mixed method approach by mixing both the qualitative and quantitative research approaches in the collection of data. Olsen, (2004) and Bryman, (2001) support the idea that mixing methodologies deepens and widens

one's understanding of his research topic. Mixing both qualitative and quantitative research approaches provides a better understanding of a research problem than when either research approach alone is used (Creswell, 2003). This is achieved through having diverse viewpoints that cast light upon the research problem. As such, while the research leaned heavily on the quantitative approach to collect survey data that can be numerically interpreted through the use of a questionnaire, the qualitative approach was also employed since the study is analytical in nature.

Mouton, (2004:135) purports that qualitative research approach operates under the basic assumption that researchers are mainly concerned with processes rather that outcomes / product. Hence McMillan & Schumacher, (2006:315) view the approach as a most interactive method in which the researcher through personal interactions with selected people, collects data in a face-to-face situation. However, Leedy and Ormrod, (2001:148) advise the researcher using qualitative approach to undertake extensive preparation and planning. Rather, a researcher should seek to assume a naturalistic method that seeks to understand a phenomenon in context without trying to manipulate the phenomenon of interest.

From the above statements, it is evident that the qualitative research approach makes it possible for the researcher to share opinions and perspectives of others and study the different ways in which people attach meaning to situations in their lives. The approach was therefore employed in this study as it created a chance to interact directly with specific people whose experiences the researcher wished to understand (parents/ guardians of Grade 1 & 8 applicants for 2017, school

principals, administrative staff and district education office officials), who had first-hand information on the phenomenon under study. Hence the study made use of data triangulation in which data from interviews, questionnaires and literature review would inform the research findings, conclusion and recommendations of the study.

## 4.4 STUDY POPULATION

In research, the population refers to the totality of persons, events, organization units, cases with which the specific research problem is concerned (De Vos, 1998:190; Goddard & Melville, 2001:34). It is the focal group from which the researcher will learn something. The initial target population for this study consisted of all public schools, education officials and parents/guardians of potential grade 1 and 8 learners in the Sedibeng West District. An estimated sample of 100 respondents was drawn from the different sections of the parents population mentioned above for the survey. The parents of potential grade 1 and 8 learners were selected as survey participants as they are the ones affected by the new admission requirements. Participants of various age ranges were required in order to establish whether the new system affects positively/ negatively a particular age group of applicants or all applicants regardless of age. 12 education officials who include principals, administrative staff as well as district education personnel directly involved in the online admissions were purposefully selected as interview respondents

## 4.5 SAMPLING PROCEDURES

`De Vos, (1998:190) defines a sample as a portion of the elements in a study population that is studied in an effort to understand the population from which it was taken. Firstly, random samples of catchment areas for the Sedibeng West

District were drawn from the Department of Education (DOE) administrative database. The study then employed the use of purposive sampling to come up with a representative sample on which to base the study. Purposive sampling enables the researcher to conveniently choose groups of individuals who are likely to be knowledgeable and informative about the phenomenon of interest (McMillan & Schumacher, 2006:75). Therefore, through this sampling method, parents of prospective Grade 1 and 8 pupils for 2017 were targeted as information rich participants in the survey as they are the ones affected by the new system of applications. For the parent population to be fairly represented the researcher purposefully identified both computer literate and illiterate parents form urban suburbs as well as from townships and informal settlements as they are all potential users of the online application system. Snowball sampling was later involved, whereby more participants were recruited through contacts of existing/ approached participants as they were likely to have knowledge of other people who met the criteria set for recruitment in this study.

Other key participants purposefully selected are school principals, the district education office management staff, as well as data capturing staff in schools and at the district education office, involved mainly in the processing of applications during the enrolment processes of students. Four schools mentioned above were purposefully sampled so as to come up with schools that fairly represent the urban and township parents and guardians.

### 4.6 SAMPLE SIZE

The proposed sample consisted of a total of **112** participants consisting of **100** parents / guardians as survey respondents and **12** interview participants from education officials as described below:

viii. Primary School Principals N= 2

ix. Secondary School Principals N = 2

x. Prospective grade 1 parents / guardians N = 50

xi. Prospective grade 8 parents / guardians N = 50

xii. Administration staff of selected schools N = 04

xiii. Sedibeng West District Education Office senior management N = 02

xiv. Sedibeng West District administrative staff N = 02 (**Total Sample size: N = 112)**

## 4.7 DATA COLLECTION METHODS

A variety of data collection methods were used in obtaining relevant data for research. The methods depended on the research methodology followed, the research topic and the availability of data (Kumar, 2005:73). Below is a description of instruments used in this study.

### 4.7.1 SEMI STRUCTURED INFORMANT INTERVIEWS

The semi-structured interview is the most common interview used in qualitative research. The interview method is a direct verbal method of obtaining data in which a researcher more or less enters into the life of a comparative stranger (Young, 1975). It seeks specific information that can be compared and contrasted with information from responses of other interviewees and even from literature reviewed (ibid). As such, same questions were asked to all respondents on the study area in a bid to allow comparisons of data to be possible. By choosing the interview method, key data was obtained first hand from people believed to have it (key informants) and the researcher was able to find out the actual feelings of

respondents through both their verbal and non-verbal communication during the interviews.

A member of the district management team, at Sedibeng West District Office was interviewed on the state of e-readiness in the district, the objectives of the initiative as well as other alternatives put in place to cater for the digitally illiterate, the physically challenged and those who do not have internet access among other management related issues related to the implementation of the online system. District office administrative staff members and administrative staff members in the selected schools dealing directly with the online application system were interviewed, checking the contribution of the new online application system to the improvement of their work processes, their developmental needs in relation to the use of the system, the challenges facing the implementation of the online application system and their feeling on the introduction and continued use of the online application system. It was not possible to hold interviews with all the originally expected number of interviewees due to time constraints since the researcher had to finish data collection in the GDE institutions by the end of September according to the instruction of the gatekeeper, the Gauteng Department of Education Research Unit. As a result, 9 participants were finally interviewed, bringing the number of interviewees down from the originally planned **12** to **9** actual interviewees. Direct interviews with participants enabled the researcher to probe for clarity of responses, something that cannot be achieved through the use of a questionnaire alone. Interview schedules based on the mentioned themes were prepared in advance with a set of questions that would be asked to all involved participants.

The total number of interviewees **(N= 09)** was reached as follows:

i. Primary School Principals N= 2
ii. Secondary School Principals N = 1
iii. Administration staff of selected schools N = 04
iv. Sedibeng West District office (GDE) senior management N = 01
v. Sedibeng West District administrative staff N = 01

**Total number of interviewees (N = 09)**

### 4.7.2 STRUCTURED QUESTIONNAIRE

The study also employed the use of a survey questionnaire to solicit views of research participants. Leedy, (2005) believes that a questionnaire provides a platform for observing common data beyond the physical reach of the observer through carefully laid down questions. Questionnaires have an advantage in that they permit anonymity of the respondents, thereby, allowing them to freely volunteer information without fear of victimization (Cozby, Worden & Kee, 1989). More so, they ensure that respondents respond to the same set of questions, thus, improving the objectivity of the data collected (ibid). In a study that has time constraints, the questionnaire helped in collecting data from many people without having to physically engage with them, so it is a time saving mechanism for research.

A survey questionnaire was developed for parents / applicants of both potential grade 1 and 8 learners for 2017 academic year. Of importance, the questionnaires checked capability and willingness of participants to use the system, issues of e-readiness, opportunities and constraints/ challenges, user perceptions of the system and suggestions for improvement of the system. The researcher designed a structured questionnaire that would solicit relevant

information without wasting much of the respondents' time through the use of 30 different forms of questions that include mainly closed questions, dichotomous as well as Likert scale questions and 3 open-ended questions.

In total 120 questionnaires were distributed through the use of two field assistants who had the task of ensuring that the questionnaires are collected back from the respondents in the Sedibeng West District catchment areas. The assistants were thoroughly informed on the need to seek the informed consent of the participants as well as their role in explaining the questionnaire especially to elderly or illiterate participants whom they would assist in completing the questionnaire. Out of the total of 120 questionnaires distributed 90 were collected back, fully completed and ready for capturing onto SPSS for analysis.

### 4.7.3 DOCUMENT ANALYSIS

According to Merriam (2002:126) and McMillan & Schumacher, (2006), documentary data is a particularly good source of data for qualitative research since such data are able to ground an investigation in the context of the problem being investigated. These documents may reveal functions, values and governance practices of an organisation. For the purpose of this study, the researcher requested and reviewed relevant documents namely, student enrolment records, waiting lists, application forms used in the previous and current registration periods. These documents helped to verify the data which was obtained through, questionnaires and the interviews. An interesting part of this document analysis was that most of the documents, that include waiting lists, enrolment statistics per school, statistics of accepted placements by guardians/parents were electronically captured which made it easier and faster to access and analyse them.

### 4.7.4 LITERATURE STUDY

Study of literature on e-government innovation, both in the South African and international contexts helped to bring out clarity on the GDE's alignment to standards of good e-government in relation to their management of school enrolments thus providing basis on which the study will anchor. It also guided the researcher on structuring of questionnaires and interview questions based on the information showing experiences of other e-government project implementations in and out of South Africa

The researcher made use of the following sources among others:

i. Master's and Doctoral theses – for insight into previous research and findings related to e-government implementation in service delivery locally and internationally
ii. The Electronic Journal of E-government (EJEG) – for scholarly articles with evidence of benefits, challenges and opportunities of e-government implementation in both developed and developing countries, thus providing insight into international best practices in e-government for improved service delivery
iii. Wikipedia Free Encyclopedia – for the definitions and explanations of various concepts and models related to e-government and innovation.
iv. Local and international textbooks on issues of public service delivery and e-government which provided secondary sources of data on which the study anchored.

## 4.8 DATA ANALYSIS AND INTEPRETATION

Although data analysis is time-consuming, it is a creative and fascinating process which entails bringing order, structure and meaning to the mass of data collected

(Marshall & Rossman, 2006:111). In qualitative analysis, data analysis is conducted simultaneously with the data collection, data interpretation and the narrative report Creswell (1994:153). Without proper analysis, data remains meaningless heaps of materials. Analysis of data requires logical organizing of collected data based on the research problem, mainly guided by the research objectives. McMillan & Schumacher, (2006: 364) agree that qualitative analysis is a systematic process of coding, categorizing and interpreting data in a bid to provide explanations of the phenomenon of interest. Maree, (2007:105) further describes coding as a process of reading carefully through the transcribed data and dividing it into meaningful, analytical units. For the purposes of this study the qualitative data was analysed in an ongoing, cyclical and integrated manner during all the phases of the research study. The coding process involved marking different segments of categorized data with symbols, descriptive words or unique identifying words for each data set. Mixed with data collected through semi-structured participant interviews with purposefully sampled participants, document analysis and a survey questionnaire was analysed in different ways in line with the objectives of the study. While content analysis in the form of descriptive presentation of data gathered is widely used in qualitative research. In this study it was employed to analyse the coded data from interviews and document analysis, and it was presented in accordance with set objectives of the study. A statistical program, IBM SPSS Statistics 23 was used in analyzing and cleaning the survey data. Due to the descriptive nature of the study, descriptive statistical analysis which includes computation of mean and percentages of data relative to citizens' e-readiness, attitudes as well as user perceptions and acceptance of the online application system was employed for the analysis of

collected survey data. Digital literacy of the citizens among other relevant data that could determine the efficiency, effectiveness and acceptability of the online application system were also some of the data that was exposed to statistical analysis after which the data was presented in form of statistical tables, charts and graphs.

## 4.9 ETHICAL CONSIDERATIONS

The researcher was granted ethical clearance by the North West University (NWU) to conduct a survey. Before the researcher set out to undertake the study, approval of the Gauteng Department of Education (GDE), was sought to carry out a study of its recently introduced e-government of online applications in the Sedibeng West District Schools and Education office. The researcher is ethically responsible for protecting the rights and welfare of the subjects who participate in the study, particularly if this involves issues of physical and mental discomfort, harm and danger (McMillan & Schumacher, 2006:16). This research had the potential of stirring emotions among parents who may have seen the system as unfair and those who may have failed to do the online applications. Therefore, before interacting with the parents, the researcher first interviewed some district office staff in order to find out how they handle such issues so that she will have a best way of handling the parents' frustrations. This helped a lot because the researcher was able to make some parents who did not meet the 30 June application deadline that they could still make late applications even in September as indicated in the interviews with administrative staff and principals.

The researcher obtained written consent of all the research participants to participate in the study by formally requesting them to be part of the research. Explanations of the purpose of the study as purely academic for the purpose of

fulfilling requirements of a Master's degree were done to them and they were made aware that participation would be completely voluntary. In addition, the participants were fully informed about the research method, the nature of their participation and the possible publication of the results, while confidentiality was assured. Respondents' anonymity needs during the data collection process was respected. Prior to visiting any office for interviews, appointments were made. No confidential information from participants was published without their approval. The research participants were made aware that no payment of any sort would be made to them for their participation in the study.

## 4.10 CHAPTER SUMMARY

In this chapter, the researcher discussed the research design and methodology that was used in this study. In accordance with the research problem, the researcher mixed the qualitative and quantitative research approaches, although the study leaned heavily on the quantitative approach through the use of a survey approach. The chapter further revealed the study population, sampling procedures as well as the sample size for the study. Data collection techniques used in the study were also briefly discussed, highlighting their importance for this type of study. Being more of a descriptive and interpretive study, data for descriptive analysis of the GDE online application system was collected through use of document analysis, semi-structured interviews with key informants as well as distribution of a survey questionnaire for parents/ guardians of prospective grade 1 and 8 learners for the 2017 academic year. Data presentation and analysis techniques for the study were also highlighted showing mainly the use of descriptive statistical analysis, aided by the use of the statistical program SPSS to analyse and clean survey data that was collected through the survey

questionnaire. The next chapter of this study presents the findings of the study as well as the discussion of those findings.

# CHAPTER 5: GDE ONLINE APPLICATIONS: DATA PRESENTATION, INTERPRETATION AND DISCUSSION OF FINDINGS.

## 5.1 INTRODUCTION

The purpose of this research study was to examine the efficiency and effectiveness of e-government in improving service delivery in public service organisations. To achieve this objective, a case study of the newly introduced online school admissions system by the Gauteng Department of Education was used to conduct the study in the Sedibeng West District of the Gauteng province. The study employed the use of both qualitative and quantitative research approaches to ensure collection of sufficient data for the study. Hence, data triangulation involving the use of data collected through literature study, document analysis, semi-structured interviews as well as an e-readiness and attitude survey questionnaire for grade 1 and 8 applicants for the academic year 2017 in order to cast more light on the research problem.

In the previous chapter the researcher discussed the methodology and research design followed in this study. Study population and sample for the study were clearly explained as well as the sampling procedures followed and instruments used to collect data for the study. Furthermore, data presentation and analysis techniques for the study were also highlighted.

The purpose of this current chapter is to present, interpret and discuss the findings of the research study on the implementation of the online application system by the Gauteng Department of Education (GDE). The chapter is divided into sections namely:

- Section 5.2: Qualitative data analysis, presentation and discussion which includes interview data and document analysis data.
- Section 5.3: Quantitative data analysis, presentation and discussion, which involves analysis of the survey questionnaire responses.
- Section 5.4: Summary of findings

## 5.2 QUALITATIVE DATA PRESENTATION AND INTERPRETATION

### i. SEMI-STRUCTURED INTERVIEW

For this study, schools that were included in the sample for qualitative data collection consisted of two public primary and two public secondary schools, purposefully selected from the Sedibeng West District. The schools are Carel de Wet Secondary School, Tsolo Secondary School, Emfuleni Primary School and Noordhoek Primary School. The schools were purposely selected to represent both township and urban public schools in the research study. From each school, the principal and one administrative staff member dealing directly with school admission processes were sampled out as information rich participants for interview data collection. However, at one of the schools, the principal was not available hence the deputy principal was interviewed in his place. At the District Education Office, a senior management staff member and two administration staff dealing with enrolments were also interviewed. Each of the principals and the District senior management staff were asked 10 questions regarding their views on the recently introduced GDE online applications from a management point of view. Due to time constraints it was not possible to have one-on-one interviews with all six administrative staff separately, hence each principal called in their administrative staff member and they were both respondents to the interview at the same time. Being a semi-structured interview, it was possible to adjust the questions to fit in the administrative staff contributions during the interview. The participants were grouped into four categories namely principals, district management staff, school administrative staff and district office

administrative staff. The sampled schools were coded as school A, B, C and D. The following codes were used to represent the participants:

a. Principal A = SPA
b. Principal B = SPB
c. Principal C = SPC
d. District Management Staff = DMS
e. District Administrative staff = DAS1
f. District Administrative Staff = DAS2
g. School administrative staff = SAS1
h. School administrative staff = SAS3
i. School administrative staff = SAS

Data analysis, organisation and interpretation were done according to Tesch's method of data analysis for qualitative research (Tesch, 1992:117). Transcribed interviews and field notes were treated as text analogues for interpretive analysis. The following steps adapted from Tesch's the open-coding method were followed in conducting content analysis of the qualitative data:

1. Careful reading of all transcripts in order to gain a general idea of the transcripts
2. Random selection of one transcript, reading through it, jotting key ideas on the margins regarding what it is about and the underlying meaning
3. Repeating the previous step with all the other transcripts then creating major topics from similar topics identified
4. Transforming topics into categories and grouping related topics together

5. Coding each data category, that is marking each segment with descriptive words or symbols
6. Assembling data material belonging to each category and performing preliminary analysis, highlighting useful quotes that might later be incorporated into the qualitative story. Major, minor and contrasting themes were categorized.

The researcher listened to the audio recordings again and re-read the verbatim transcripts to familiarize herself with the data. All the verbatim transcripts for the semi-structured interviews held with principals and one district senior management staff member were analysed according to Tesch's method above. The major questions themes and sub- themes that emerged from the coding and analysis, guided by the theoretical frameworks namely TAM, DOI as well as the Roadmap for E- government, are indicated in Table 5.1 below.

**Table 5.1: Interview guide**

| MAJOR QUESTION | THEME | SUB-THEMES UNDER THE QUESTION |
|---|---|---|
| 5.2.1 Perceived objectives of the online applications initiative | E-government vision | 5.2.1.1 Why are we pursuing the online application system |
| 5.2.2. E-Readiness factors that influence the GDE online application system in the district schools? | Readiness for e-government | 5.2.2.1 IT infrastructure<br>5.2.2.3 internet access<br>5.2.2.3 Skilled personnel |
| 5.2.3 Is there capability by applicants to use the online application system? | Perceived ease of use | 5.2.3.1 Literacy of applicants<br>5.2.3.2 Availability of resources |
| 5.2.4 Is the online applications initiative an easy and useful system for learner admissions? | Perceived usefulness of the initiative | |
| 5.2.5 What do you perceive as advantages of this new online | Relative advantage of the system | 5.2.5.1 Advantages for applicants<br>5.2.5.2 Advantages for schools / district office |
| 5.2.6 Any measures taken to cater for disadvantaged applicants? | Compatibility of initiative with needs and values of users | 5.2.6.1 Measures taken for the illiterate applicants<br>5.2.6.2 Measures taken for those without resources |
| 5.2.7 What challenges were met in the implementation of the online system and how | Complexity of the initiative | 5.2.7.1 Applicant challenges<br>5.2.7.2 Administrative challenges |

| | | |
|---|---|---|
| were they handled? | | |
| 5.2.8 Generally, have parents / applicants shown willingness to use the new online application system? Give reasons for your answer | Observability of tangible results of initiative | 5.2.8.1 Applications submitted in time<br>5.2.8.2 Complaint/ compliments |
| 5.2.9 Is there a likelihood of the system being accepted by the citizens in future applications for admission? | Diffusion and adoption of initiative and | |
| 5.2.10 Suggestions / recommendations for the improvement of the online application initiative | How e-government can improve citizen participation in public affairs | 5.2.10.1 Recommendations for the GDE<br>5.2.10.2 Recommendations for the schools<br>5.2.10.3Recommendations for applicants |

### 5.2.1 Perceived objectives of the online applications initiative

The Pacific Council on International policy (PCIP, 2002) in their Roadmap for E-government suggests that leaders should have a clear e-government vision and an understanding of why they are pursuing a certain e-government initiative if the project is to be a success. In this interview, the respondents revealed their understanding of the objectives of the e-government. The researcher intended to explore views and understanding of both the district and school management staff on the objectives of the recently introduced online applications, hence the

question was posed to the district management staff member and the four school principals. 80% of the respondents showed a common understanding of the reason for online applications as the need to reduce congestion and long queues in schools during the normal application periods, usually in October, by allowing applicants to apply from different places and at different times as early as April. Respondent DAS1 said,

> *"The aim is to reduce lots of queuing in schools by parents applying for space for their children. Parents do have the opportunity to really apply at their own time, own place and own convenience, you simply know that your child's space is a mouse click away you see. If only people can see this advantage of technology"*

Another identified objective was the need to ensure fair distribution of learners to schools by monitoring the number of learners being accommodated in the schools in relation to their places of residence. Respondent DMS from the district education office had this to say:

*"The district has in total about 136 schools, 55 of which are high schools and the rest are primary schools. We thus have maximum primary schools as opposed to secondary schools, so people from feeder primary schools end up sometimes having no space in the schools in their areas as people are sometimes applying to schools in areas they do not come from. So if applications are done online, it is now the responsibility of the GDE to ensure fair distribution of learners across all the schools…yes, also reducing corruption and favouritism in the admission processes in the schools."*

Responses also revealed that both administrative and management staff agree that the system is aimed at placement of learners within schools that are in the minimum distances from their residential areas. This was evident in the fact that most of the respondents mentioned that in placement of the learners they considered mostly the residential address of the applicant above other criteria.

These findings confirm the objectives of e-government identified in literature, which include making services available to citizens at any place and any time; reducing citizens' physical queuing for government services at service delivery centres; increasing the sector's responsiveness in delivering services that meet individual, citizens' and business needs effectively and efficiently as well as improving government-citizens interaction by making information and services more accessible to the citizens.

The objectives of the GDE online application system also tally with those of the Thimpu Thromde, (2016) Educations System of Malaysia. Both systems aim to provide faster, easy and reliable services through more simplified and convenient learner admission procedures as well as faster interaction with service users. They have also greatly focused on using e-government to reduce application-related costs by replacing physical submission of applications at schools of choice with electronic uploading of relevant application information. However, in the case of the GDE online application, physical submission of information to schools has not been totally eradicated as no link has been provided allowing uploading of necessary application documents. Parents still need to submit documents in person at the school they are offered, which still costs them time and money.

Respondent SPC however, had a different view on the goals of the new online application system. He argued that its objective was to take away principals / school managements' powers to make enrolment decision. His actual words were:

> "*You know what; this system is nothing but the government's way of taking away school managements' powers to make enrolment decisions for their schools. SGBs and school principals no longer have control over school admissions; they end up taking learners who do not meet their expected standard. In fact, the schools' enrolment criteria are no longer considered, only the GDE criteria is recognised"*

Respondent SPC further argued that the issue of placement by residential address is not true, as most people in their catchment areas of CW3 and CW4 were not accommodated in the school. He said most had no option of choosing their school as the system threw them away from closest schools. Some of his remarks were:

> *Many people staying a street or two from the schools came to us complaining that we had rejected their applications. That was not our problem, our hands are tied we cannot do anything to place them in the school if they were not placed on the front end waiting list for our school*. *Therefore, this objective of placement by residential area, uhm, I don't know if it really works*".

However, closer look at the response to the question about the online applications objectives do reveal evidence that the GDE officials in coming up with the new initiative, had considered why they were pursuing the initiative and

had a clear vision of the e-government expected outcomes as advocated in the Roadmap to E-government. Leaders should think about how to harness technology to achieve objectives for reform (Farelo & Moris, (2006:3) thus, this new online application system is being pursed for achievement of reform in the education sector to being more efficient and responsive to the needs of the stakeholders in education. South Africa's Vision 2014 described an inclusive Information Society, one in which the use of ICTs would be harnessed to ensure that everyone has fast, reliable and affordable access to information and knowledge that will enable them to participate meaningfully in the community and economy[26]. This vision is clearly demonstrated in the GDE's online application as it has as one of its focus, the intention of delivering educational information and services directly to the citizen in the fastest and cheaper way at all times. Thus the implementation of the new system is guided a lot by a clear vision and e-government priorities as recommended in the E-Government Roadmap[27].

### 5.2.2: What e-readiness factors influence the GDE online application system?

The readiness of a government and its agencies to effectively implement e-government depends on a variety of e-readiness factors. According to EUI, (2009: 4), e-readiness is a means of determining the quality of a nation's IT infrastructure and willingness of its citizens to use ICT to their own advantage. This makes e-readiness assessment an important starting point for e-government implementation. The e-readiness question in the interview was divided into different components described below.

[26] See Presidential National Commission on Information Society & Development, "Towards an Inclusive Information Society for South Africa, A Country Report to Government", November 2005.
[27] Refer to the Working Group on E-Government in the Developing World, "Roadmap for E-government in the Developing World, 10 Questions E-Government Leaders Should Ask Themselves", April 2002. Pacific Council on International Policy. Accessible online www.itu.int>net>egov>pacifc_council

### *5.2.2.1: ICT INFRASTRUCTURE AND INTERNET ACCESS*

All the school principals in the sample gave an indication that their schools were equipped with computers (desktops and laptops), and this was also supported by the administrative staff members, most of whom confirmed that they use computers in their day to day work. However, when it comes to internet access, there were different sentiments from the respondents. Respondent SPC form school C made the following comment:

> *Our internet connection is very slow, yes, we do have some connection but we do not have a proper WIFI connection. We use Iburst, that's what our school can afford considering the fees of R150 that we collect from learners per month. Its, very little, it cannot go far to provide resources, hence we stick to the basic minimum resources as much as possible.)*

Respondent SPA had a different explanation of the nature of internet connectivity used in their school. His response was:

> *This school does not have a proper internet connection. We use a Telkom mobile modem to connect to the internet via a laptop. Thanks to mobile technology, we are able to connect via a prepaid Cellc data SIM card that we regularly load with prepaid data and we use it in the modem. Eh, we cannot take a contract line that will be a big expense for us. With this prepaid we usually buy 3 BG of data for about R300 and it lasts us more than a month, about one month and three weeks to be specific. But during the online application period from April we had to step up our bundle purchase a bit but the problem is the downloading and uploading speed, it is slow and sometimes in poor network we fail to properly connect".*

Different internet connection is also used in school B. respondent SAS2 from the school said the school had good internet connection through the use of a Wi-Fi router, with 3 desktops and four laptops connected. This means there is more access to internet in this school making the processing of applications a lot faster. SPD form School D had this to say about internet access in their school:

> *"The school has a very well equipped computer lab with computers that can all connect to the internet via our Wi-Fi system. We do not have much of a problem with regard to internet access in both the lab and the admin offices, we have fast internet all the time".*

In general, the collected data therefore revealed that all four schools under study had some form of internet connection which enables them to work online in the admission of learners though at different paces and this may mean most of the schools in the district have the capability of working online. The findings also show that most schools have a desire to work digitally by embracing mobile technology in order for them to survive in the digital world through making use of mobile internet, and this is sign that they are ready for a shift to e-services. Hence the e-readiness factor of IT infrastructure and internet access is addressed in the district schools although there are discrepancies in the sense that sources of internet, costs and speed of connection are different in the schools. This provides already a positive foundation towards implementation of e-services in the district schools; however there is need to upgrade the internet connections in all the schools in order to provide faster connections that enable speedy delivery of services.

#### *5.2.2.2 SKILLED PERSONNEL*

Successful e-government adoption depends upon the availability of a technically skilled workforce to For e-government projects to be successfully implemented there is need for technically skilled personnel to maintain and operate the technology used in the government sector (Lesame, 2005). Without skilled personnel, both front and back office processes of the organisation dealing with e-government initiatives are bound to fail.

The researcher checked on the preparedness of schools and the district education office in terms of skilled human resources. Responses from all participants revealed evidence of availability of skilled manpower with different levels of skills.

SPA had pride in his administrative staff member, (SAS1), whom he said has shown great computer skills regardless of not having any professional qualification. This is what he had to say:

> *"Believe me mam; my administrative staff dealing with these online applications is just wonderful. He is just a post-matric student who came to volunteer to work in the school since he did not have enough resources to proceed with his studies. But I must tell you, he is a hands-on person, he learns so fast, he even understands this system better than me. Yes, he did receive training from the GDE on the online applications in a workshop we principals were asked to attend with one admin staff in March. He can take you through the whole application process better than I could, I trust his abilities."*

Respondent SAS1 then took the researcher through the application process demonstrating and explaining in detail the steps that applicants follow and the roles of enrolment officers in the process. He summarized the steps while navigating through the steps as follows:

> *"Firstly we connect to the internet using a Telkom mobile modem so that we can access the GDE online applications link on www.gde.co.za/admissions. This brings us to the welcome page to online applications 2017. An applicant first has to register the parent/guardian details as well as the learner's information, then creates username and password which they will use to login to the application system to apply. After they log in they can now click the new application button and complete the application process following instructions that come up on each step. Once they click the 'submit' button, a SMS is automatically sent to them on the cell phone number they registered in step 1, notifying them of successful submission of their application and telling them their waiting list number. The next phase of the process will then be the placement process where we as school enrolment officers can now access the waiting lists created for our school automatically by the system and start the learner placement process. We are instructed to first place those learners on the front end waiting list……."*

Like the school principal (SPA) had mentioned, SAS1 proved to be well acclamatised to the application process and demonstrated great understanding of information communication technology. He even showed that he enjoys his work a lot.

In school B, SAS2 also mentioned that most of the administrative staff members were computer literate and had knowledge of the use of the internet. His remarks were:

> *"With more than 3 computers connected to the internet, we are always working and accessing information online. Everyone in the admin office is computer literate and they are up to grips with internet systems. Oh yes, we have an added advantage of an IT intern in the school, he usually comes to our rescue when we face problems with the technology"*

Just like in school B, SAS3 and SAS4 form school C and D respectively as well as the district education office staff also have good computer knowledge and have no problem using the internet. They all have professional qualifications which have computer studies as part of the modules studied, making them very computer versatile. Figure 5.1 below shows a summary of education levels of the administrative staff in the sample.

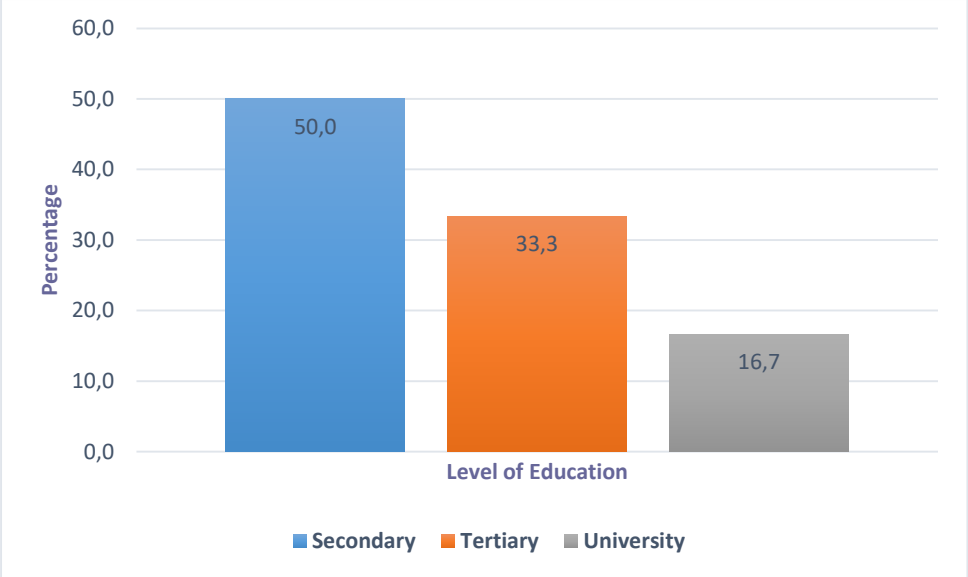


**Figure 5.1: Administrative staff educational levels of achievement**

Ndou, (2004) found out that poor literacy among citizens interferes with the type of media that can be available for e-government to be effectively adopted. The interview data of this study revealed that 50% of the administrative staff in the interview sample have a minimum academic qualification of Grade 12, 33.3% have a tertiary qualification while 16.7% hold a university degree. This shows that the administrative personnel in the district's schools and education office have average literacy levels which points to the fact that they have the potential to understand online processes of educational service delivery given enough training.

E-government success depends on the users' understanding of various technology, with computer literacy being one pre-requisite for administration staff to effectively handle the online application system. The researcher also checked if the sampled administrative staff had computer skills that would make them able to handle the online applications. Figure 5.2 shows the computer literacy of the administrative staff who were used in the interview sample.

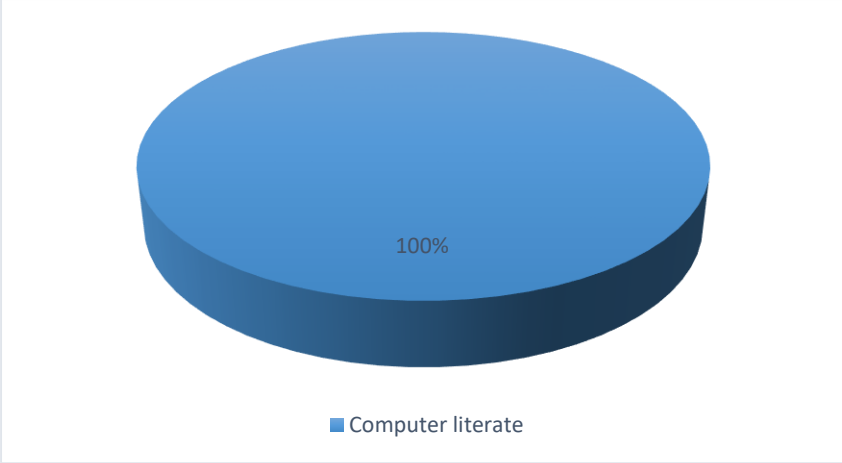


**Figure 5.2: Percentages of computer literate staff**

100% of the interviewed administrative staff indicated that they had an understanding of working with computers and they have evidence of skills that can make them work effectively in handling the online applications, none of them showed that they were computer illiterate. Furthermore, there is evidence that most of the staff do understand the internet technology which is an important aspect in any e-government system of service delivery. The degree of internet knowledge among the staff members however varies as shown in **Figure 5.3** below.

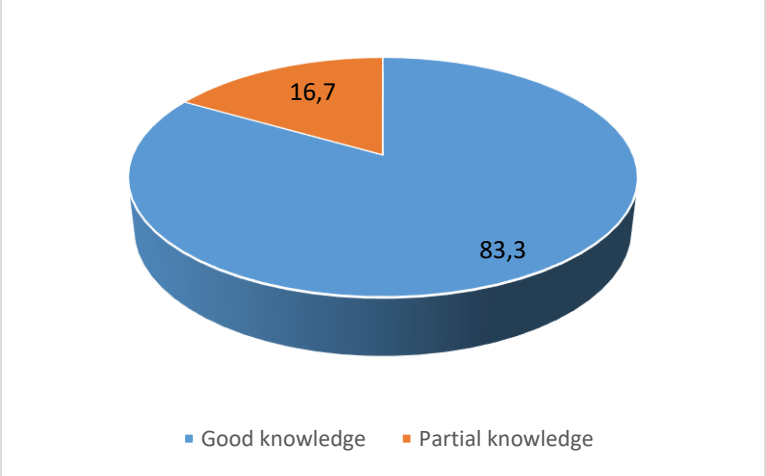


**Figure 5.3: Administrative staff's internet knowledge levels**

The majority of the staff (83.3%) confirmed good knowledge and regular use of the internet both personally and at work while only 16.7% have partial knowledge. The fact is all the administrative staff members interviewed know how to use the internet which makes it an advantage for them when it comes to handling of the online applications. Hence, the GDE schools and education office clearly considered the recommendations made by Chatfield, (2009) that e-government implementation requires mobilization of internal resources, in particular, skilled people, to implement changes

However, with regards to knowledge of the online application system itself, not all administrative staff from the different schools had confidence. While some acknowledged full understanding of the new online application process, some said they do not have a good understanding of the system. **Table 5.2** below shows the different levels of administrative staff understanding of the new online system

**Table 5.2: Administrative staff's online application knowledge**

| | | Frequency | Percent | Cumulative Percent |
|---|---|---|---|---|
| | Partial understanding | 1 | 16.7 | 16.7 |
| | Good understanding | 5 | 83.3 | 100.0 |
| | Total | 6 | 100.0 | |

Regardless of the differences in understanding levels however, it can be seen from the table above that all the administrative staff have some understanding of the new system, with 83.3% of them having a good understanding. This is a good starting point as their understanding helps a lot in guiding the applicants through the whole application process and in ensuring an effective shift from manual to electronic processing of applicants, which in turn has an influence on the improvement of their service delivery performance.

For a new initiative to be successfully implemented, it is important that users be properly prepared through adequate training. Effective training and capacity building for e-government success should be the emphasis whenever new initiatives are to be implemented (Word Bank, 2002).The researcher sought to establish whether the Administrative staff, school principals and district management team had enough training on the online application processes prior to the implementation of the new system. There were varied perceptions of the quality of training offered. Respondent SAS3 from school C had this to say:

*"I can't actually say we were trained, we were simply shown a PowerPoint presentation of the online application process. Hence at first I struggled a lot till a person from the district office came to our school and helped me to understand the process. I think we needed more training before the implementation of the system. As it stands now, I personally was learning together with the parents when I was helping them in the school which took a lot of time for me to help one parent at time. I really exercised the patience of a mother"*

Respondent SAS2 echoed the same sentiments that training was not sufficient arguing that only one administrative staff member attended the workshop organized by the GDE in March with the school principal. His comments were,

*"You see; the training was not very meaningful for me. One staff member goes to the workshop but in the office we are 3 members working on admissions. Some of us were trained by the colleague who attended. In fact, she only showed us a PowerPoint presentation of the steps to be followed. Much of our learning was hands-on, in the end we did manage though"*

Respondent SAS1 however, confirmed that the training he received did prepare him thoroughly for the work. His remarks about training were:

*"Yes we were trained before the start of the application period. Even afterwards, we regularly have workshops with officials from the district and head office. Just last month (August) there was a district workshop to check on the progress in the placement phase and to explain how we*

*should go about it. We are always updated on any new information or changes".*

**Figure 5.4** below provides a summary of the administrative staff's perception of the quality of training received before the online applications were rolled out. It is important to note that the many administrative staff members were not very satisfied by the amount of training they received before the online applications went into full-scale roll-out. This could have a negative effect on their performance during the actual application period which in turn could lead to the jeopardisation of the online application system as an effective and efficient service delivery strategy for the Gauteng Department of Education.

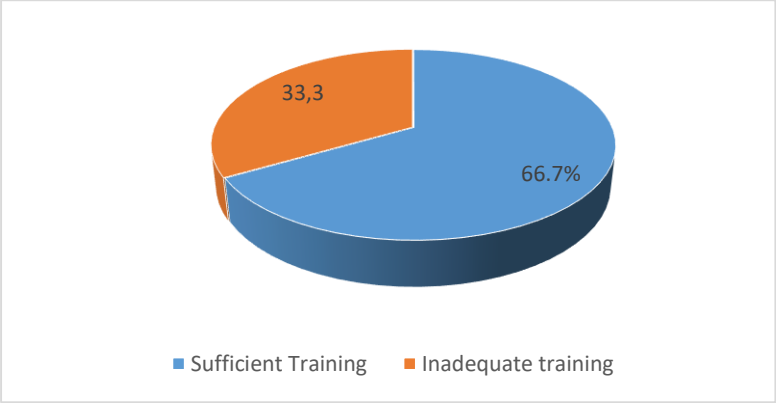


**Figure 5.4: Staff perception of adequacy of training offered**

Two GDE staff from the district education office (DMS and DAS1) both felt that the training given was sufficient as the processes were clearly explained and there were copies of the presentation handed to each member for the purpose of practice. DAS1, a qualified administrative staff member working with the admissions team said:

*"The problem is change often faces resistance even among staff members. For me, the training given was very clear; the step-by-step processes are there on the website too in case someone has forgotten. Plus, whenever we have a problem we get assistance from the head office online, there is nothing to worry about when it comes to training because help is available always".*

A step-by step guide given to administrators on the online application process is available on the GDE website for access by any administrative staff who might have forgotten the process.[28]

Of the 3 school principals interviewed, 2 were positive that the training provided for staff members was good, although it was done for a short time. According to respondent SPA, whenever there are new developments or information, the principals and their administration staff are called for workshops to make everyone up-to-date with current situations. However, respondent SPC argued that the training time was too little for both principals and administrative staff to master the system effectively. His comments were:

*"Maybe it's because I am an old man born before the age of technology, I don't know. But truly speaking, training through the PowerPoint was more like a nightmare. I even wondered if old illiterate parents would be able to understand it if I was failing to understand it myself. Fortunately, my administrative staff has sharp memory, she saved me. I feel the training should have been done for some time."*

The DMS's response was:

[28] See the appendices section for a copy of the guide.

*"We usually distribute interns from the district office to schools to help administrative staff to understand the system, just for a few hours per school …"*

The district office thus realised that school enrolment staff might have problems. Therefore, they decided to organize people who should go round in the schools to assist. This foresight that administrative staff might have problems understanding the new system also serves to confirm the common view of some of the respondents that training was not adequate enough for them to understand the new system and use it effectively to improve their efficiency and performance.

On average however, 75% of the total interview sample were satisfied with the training received, especially those of the young generation who really felt it was simple and straight forward. 25% of the respondents however, believe that more could have been done to ensure adequate training of the staff. To them training was not sufficient enough for them to work confidently on the new initiative.

These results imply that though the GDE did commit to technological training of the workforce as other users of the online application system, more still needs to be done to improve the workforce's technical know-how with regards to conducting online admissions efficiently and effectively in future. Therefore, in line with the World Bank, (2002) recommendations for effective e-government implementation, the GDE needs to step up the quality of training that it offers the administrative staff in order to improve their efficiency and effectiveness in delivering e-services.

### 5.2.3 Is there capability and willingness by citizens to use the online application system?

Davis, (1989) in his Technology Acceptance Model (TAM) posits that adoption and sustainability of an innovation vary subject to the nature of its intended adopters and how they perceive the innovation in terms of its ease of use and its usefulness. In the above question the researcher sought to find out if the administration staff had confidence in the applicants' capability and willingness to use the online application system in future.

Most of the respondents agreed that general and computer literacy had an influence on the applicants' capability and willingness to adopt the online application method. Respondent SAS1, SPA, and SAS2 who are from township schools argued that the capability is low on the part of most applicants in their area unless more training of applicants is done before and during application periods. SAS1 mentioned that he had to assist most of the applicants throughout the application process, not because they did not have resources, but because they did not have a clue on how to use a computer, worse still, to use the internet. Respondent SAS2 made the following comments:

> *"On average I think I assisted more than 60 parents who had no idea of how to use a computer at all. The good thing though is that they were willing to listen and to be helped throughout the process."*

Respondent SPC agreed with the three respondents mentioned above, and mentioned that most of the old folk were afraid and confused thinking they could not secure space for their children. Most according to him were complaining about why the department of education had decided to change the method that has been working well for everyone, rich or poor, literate or illiterate.

Therefore due to the difficulties applicants faced in submitting applications, chances ofthe citizens readily accepting the new system were not very high according to the above respondents' comments and observation. This agrees with Davis, (1989) observation that how much users believe that using a certain system would be less taxing determines to a greater extent their willingness to accept the system.

However, respondents SAS3 and SAS4 did not see most of the applicants as being incapable. They argued that the applicants' coming to the school for assistance was due to the complications in the system itself, especially when the server crashed more than twice while parents were trying to submit their applications. Respondent SAS4 from school D made these remarks:

> *"Generally parents were willing to use the online applications and most parents I interacted with are capable of using the system on their own if the system is perfected. Most who came to the school to apply had already created their user credentials on their own. However, due to fear of failing to secure space due to system complications on the 19th of April, they came to the school to complete their applications. Yes, we did help some throughout the application process but most did it on their own on our school computers".*

At the district education office, both the senior management staff (DMS) and the administrative staff were of the idea that most parents are capable of using the system. Respondent DMS also responded:

> *"Online applications are not about using computers only, the system is fully mobile friendly though it requires a bit of literacy. Most people with*

*smart phones can use their phones to do their applications. I talked to quite a number of applicants who had applied that way……"*

DAS1 also added the following comments:

*"People are only afraid of change. They have fear of the unknown I think hence the complaints by some applicants. After explaining the reason for this new method of application to some of them, most applicants who came with complaints did the application themselves, meaning they knew how to do it. As long as resources are made available to those without and applicants are fully informed in time about the application process, the system is likely to be adopted by many as it seems better than the old method of application…"*

On average therefore, 66% of the respondents believe that most people are capable of using the online application method and they believe strongly that it will be accepted by most people if information is provided adequately. About 33% of the respondents however argue that the system is a bit complicated for most parents in the townships though they feel that with adequate help and training the parents are willing to use it again in future because most saw it as more efficient and effective than when they used to wake up to queue in schools to apply for space. The findings point to the fact that adequate training in the use of the new online application method is not only necessary for the administrative staff in the schools, but also the end-users, the potential applicants themselves so that they can appreciate its efficiency over the old method of application they had gotten used to. It is also evident from the different responses that the digital illiteracy problem is still contributing to the digital divide in the district under study,

something that may hamper the effective use of e-government initiatives in service delivery if it is not addressed. Hence Naidoo, (2007:324) and Farelo & Moris, (2006:6) argue that since most people in a country have challenges with regards to poor infrastructure, resource shortages and unequal access to technology, bringing e-government to the South African citizens becomes a challenging procedure.

### 5.2.4 What do you perceive as the advantages of this new online application method?

According to Rogers, (1962), adoption of any innovation by its potential users is influenced by the degree to which the innovation is perceived as better than the practice or idea it is replacing (the relative advantage of the innovation). In the above question the researcher aimed to assess the participants' understanding of the advantages of using the online application system as opposed to the manual process of applications that it is replacing. All participants observed that the new online method has more advantages over the old method.

100% of the participants concurred with the idea that the new online application system greatly reduces paperwork in their enrolment processes, thus it improves their performance. Respondent thus SAS1 asserted:

> *"This new system goes far in improving my performance and productivity in my job. The number of people I used to assist and the applications I processed per day during the old system of applications have more than doubled with the introduction of the electronic processing of applications".*

According to respondent SPD from school D the new system allows for early planning by schools if enrolments are done earlier while respondent SPC also observed that if properly administered, the online application system would result

in less workload for enrolment officers both in schools and at the district office. His comment was:

> *"With all applicant information placed on distinct electronic waiting lists, it is easy for enrolment officers to retrieve information and work on it without having to physically write it down and store in physical files. Rather, I can say it helps promote a shift to paperless offices that are more easily manageable."*

These observations by the respondents agree with what was observed by Fang, (2002) and Anni, (2016) that e-government has identifiable benefits in improved efficiency of government officials and faster turn-around time for service delivery. On average, 80% of the respondents in the sample observed that the new online application system allows much faster processing of applications unlike in the old system where each applicant's application form was individually captured manually by the school administration staff. The same e-government benefits were also reaped by the Thimpu Thromde Education office in their implementation of e-services in Malaysia when they managed to greatly reduce application processing time and improved their management of Lerner information.[29] Hence respondent SAS1 made the following remarks in support of the benefits of the new GDE admission system:

> *"The system has a way of automatically creating waiting list A, B and LA (late application) which is available online to enrolment staff for each school as long as they are connected to the internet. Our task is only to access the front end waiting list (wait list A). If the learner meets the*

[29] See the Thimpu Thromde Education System in Chapter 2 above.

*selection criteria, we simply click the "accept" button and automatically the system sends a notification of acceptance and instructions on documents to take to the school within two weeks from date of acceptance. It's very fast, no more sending of letters that took long to provide feedback to applicants."*

Respondent SPA also highlighted the advantage of great connectivity between the schools, district education office and the head office. Although administrative staff can only access waiting lists for their own schools and cannot see what is happening in other schools, the district and head office can access all waiting lists and monitor the placement process of the schools online. The head office can access information for the district office as well as the individual schools to check what is happening, hence there is constant interaction.

This connectivity and online interaction allows the GDE to see and monitor schools that still have availability of space and to do placement transfer should a learner be wrongly placed and deserves a transfer which makes problems / queries to be quickly communicated and immediately solved without having to travel to the district office or head office. For instance, learners placed in schools not offering their home language may need to be transferred to schools that can accommodate their linguistic needs and this is done online by either the district office or the head office who have access information about all schools that still have space. The Thimpu Thromde Education office refers to this connectivity and interaction between the schools and the office as e-management enabling distant management of schools by the main office through an interactive interface between the schools and the head office. Hence like the Thimpu Thromde, the

GDE new online system promotes not only e-services but also the possibility of e-administration thus helping in the improved interaction and vertical integration of the front office and back office operations of the Gauteng Department of Education.

Close analysis of the respondents' remarks shows that there are many potential benefits of implementing the online application system in the education sector. Providing e-Government services will reduce service delivery time as well as effort, and will speed up the admission procedures. It will also improve people lives economically in the sense that costs associated with physical submission of applications in schools will be removed. There is no need to queue up for services at schools thus saving applicants both time and money. Thus it is argued that e-services make room for public service process re-engineering and re-invention, leading to reduced costs for both government and citizens in accessing and using services, as well as lessening the chances of corruption (Haque & Panthrannarakul, 2013:33; World Bank, 2002; Fang, 2002:5)

According to most of the interviewees, the online application system will improve their productivity as administration staff; improve quality of service delivery by schools and the education offices. They also envisage it to reduce the overall costs of the organizations through reduced paperwork and improved data processing and storage. Information sharing is quick and prompt, speeds up the process of decision-making and increased productivity in governance. Furthermore, it will increase transparency and commitment of government officials in providing more qualitative and responsive services to the citizens. The findings from the interview data thus agree with those of Nazi's, (2009) study of

the Fiji e-government situation that e-government had a positive co-relationship with effectiveness, efficiency and equity in service delivery. Hence, through the new application system, the GDE has made the possibility of improved G2C interactions which in turn has an influence on the education department's service delivery to the citizens.

### 5.2.5 What measures were taken to cater for disadvantaged applicants?

Rogers, (1962) further mentions the importance of an innovation's compatibility with the needs and values of the users if it is to be readily acceptable and adopted by its intended users. Hence by asking the above question, the researcher sought to establish whether the needs of applicants were taken into consideration and if no one was disadvantaged by the introduction of the new system. Responses from the participants revealed that measures were taken to cater for those without resources and the computer illiterate people.

#### *5.2.5.1 MEASURES TAKEN TO CATE FOR PEOPLE WITHOUT RESOURCES*

Mphidi, (2009: 6-7) argues that one of the major hindrances to e-government implementation in South Africa is the economic disparity where most underprivileged people have little to no access to electronic services. Furthermore, accessibility to the internet has also been observed as a major hindrance to effective use of e-government services in the country (Farello & Moris, 2001; Matavire et al, 2010, Mphidi, 2009). This indicates the problem of the digital divide that needs to be carefully addressed for benefits of e-government to be reaped by all. As a result it was important to find out any measures put in place by the GDE to deal with the like

Participants indicated that application centers were established around the district schools for use by those who did not have their own resources like computers,

smart phones or internet access. Eleven venues with facilities for online applications were identified and communicated to the parents via circulars and announcements made during parents' meetings in various schools. Table 5.3 below show the details of application centers identified for use by applicants in the Sedibeng West District.

**Table 5.3: Sedibeng West District online application venues**

| CIRCUIT | VENUE | PHYSICAL ADDRESS | CONTACT DETAILS |
|---|---|---|---|
| | Sedibeng West District Office | 06 Samuel St Zone 18, Sebokeng, 1983 | 016 594 9167 |
| Four | Poelano Secondary school | 8641 Mojao St Ext 11, Evaton West, Vanderbijlpark | 082 556 1920 |
| Four | Lakeside Sec School | 4201 Seboloane St, Palm Springs | 016 581 1535 |
| Three | Setlabotjha Primary School | 2496 CNR Knox & Cinderella Eatonside, Residensia | 084 593 1714 |
| Three | Boitumelo Sec School | Plot 555, Tokyo Sexwale Street, Vanderbijlpark | 016 989 2000 |
| Three | Qhoweng Primary school | 630 Phuthatswana St, Zone 13 Sebokeng | 016 594 1619 |
| Two | Moshate Sec School | 620079 Zone 17, Sebokeng | 016 592 5085 |
| Two | Polokong Primary School | 1728 CNR Glova & Mayibuye, Vanderbijilpark 1900 | 074 779 7856 |
| Two | Dr Nhlapo | 1229 Moshoeshoe St | 016 988 1777 |

| | | | |
|---|---|---|---|
| | Intermediate | Boipatong, Vanderbijlpark 1911 | |
| One | Mqiniswa Primary School | 777 Xuma St, Bophelong Vanderbijlpark | 016 986 1517 |
| Two | Laerskool Parksig | Plot 78 Louisrus, Vanderbijlpark, 1911 | 016 989 1306 |

A closer look at the venue shows that most (10) application venues were located in township areas where it is most likely to have people without required resources. Only one centre was located in the suburb areas, showing also the likelihood of having fewer people in those areas without necessary resources to complete the application process easily. Although the Sedibeng might be having a digital divide problem, establishment of the application centres in the district schools is enough evidence that the resource needs of the applicants were put into consideration before the beginning of the registration period. This according to the researcher shows GDE's commitment to fighting digital exclusion among the citizens during the use of the online application.

#### *5.2.5.2 MEASURES TAKEN TO CATER FOR THE ILLITERATE*

The GDE foresaw the possibility of some applicants being illiterate digitally or otherwise, as highlighted by Matavire et al, (2010) and Mphidi, (2009) that South Africa still suffers from the digital divide problem. Hence a solution was to have trained personnel in all the eleven centres and all schools who would help such applicants in the application process. On the first day of registrations (11 April), administrative staff from other schools that were not application venues had to go to offer their assistance in the application centres in the neighbourhoods, although system complications could not allow them to help a lot of people.

Respondent SAS1 said he had to go and help applicants at Mqiniswa Primary School but unfortunately due to the system crash on those first few days, he had to start helping on his laptop at their school after the system was restored. Therefore, although application centres were established, individual schools ended up assisting applicants within their schools since the application later took longer than what was once anticipated. The GDE thus agrees with the recommendations made in the Chatfields, (2009) study, that e-government implementation requires mobilization of internal resources, in particular, skilled people, to implement changes successfully. By the time of the interviews (25-30 September, 2016) School A and B were still assisting parents and taking late applications although they were to wait for go ahead from head office to place them in schools.

Generally, it is evident that the GDE was proactive in its planning of the online applications as plans were put in place to alleviate digital divide problems well in advance so that no one was excluded from the application process.

### 5.2.6 What challenges were met in the implementation of the online applications and how were they handled?

Although e-government grants huge benefits and synergies to governments and societies, it usually faces many challenges and obstacles, especially in developing countries (Anni, 2016; Ndou, 2004, Mphidi, 2009; Elsheikh *et al*, 2008). To understand the e-government implementation challenges in the Gauteng Department of Education, particularly in the Sedibeng West district, the researcher saw it necessary to check the opinions, perceptions and attitudes of the sample group from the district. Interviews with participants (Principals, administrations staff and education office staff), were aimed at finding answers to the question, “What are the major challenges facing the implementation of the

GDE online application system in the Sedibeng West district and how were they handled?”

Results from the interview responses identified challenges and problems that may need to be conquered to guarantee further successful utilization of the online application and admission system. The challenges and problems were categorized and analysed in themes as follows:

- **Applicant awareness of the new online application system (e-service).**

All the participants had a common view that information was not sufficiently provided to the users of the new system (the potential applicants) regarding the new online application method. They argued that there was no provision for actual information sessions with parents as a result, many parents were in confusion when they were told that this year no one goes to schools to apply but everyone would apply online for grade 1 and 8 space. Although communication was sent to the parents through circulars or letters from schools, most had no idea of what this online application actually meant as it was not clearly explained to them. Matavire et al, (2010) also found out that service providers in South Africa have a tendency to think that the delivery of services is the only important matter without realizing that communicating about it and making service users aware of how to use/ access the services is probably more important. This means that user involvement in the planning of e-government initiatives is very minimal. Sarmid and Hamid, (2009) also observed that in most developing countries, e-government projects usually suffer from poor citizen utilisation which is often left till the implementation stage resulting in inadequate capturing of the citizens’

needs. The interview respondents in this study strongly believe that this non-involvement of users from an earlier stage somehow contributed to the slow response rate by most parents in the district to the call to submit applications online by 30 June 2016 as most parents did not submit applications as early as expected.

- **System complications:**

The World Bank, (2002) asserts that a government should be e-ready in terms of infrastructure and the accessibility of ICT to citizens thereby emphasizing e-readiness as an important dimension of e-government. The GDE seems to have missed a bit in its e-readiness assessment of the ICT infrastructure and its capacity to handle the online application traffic. All interview participants highlighted the problem of the system crash that happened in the early days of the online applications, especially on the 19th of April when applicants were supposed to actually submit applications online. They pointed out that parents were very frightened that they would not be able to secure space for their children; hence they had to face a whole day of complaints from the parents. Most applicants who did not have their own resources and internet access only managed to submit applications after the 19th of April since the system was down during the day and few managed to submit at night when traffic was a bit less, thus they felt disadvantaged since those who managed to do it same day had an upper hand when it came to positions on the waiting lists. This challenge almost took away the parents' confidence in the new online application system both in urban and location areas, with most of them demanding that they be allowed to go and apply in the schools like in the previous years. The perceived ease of use of the system by the parents at this point thus had a negative

influence on their perception of the new system. This complaint was however short-lived as the GDE promptly made sure the system is stable enough to accept numerous applications without suffering a system overload.

- **Inadequate training of administrative staff on the new system:**

The World Bank, (2002) placed great emphasis on the need for effective training and capacity building for those who will be involved in an e-government initiative in order to guarantee its success. However, in the situation of the GDE online application system implementation, it appears the GDE placed little emphasis on the need for capacity building before the full scale implementation. Some administrative staff and school principals felt that the system challenged them as they had not gotten sufficient training beforehand. Although training was provided, they had a strong feeling it should have been done much earlier and longer for them to effectively master the online application concept. They think this would have made it a lot easier for them to explain the system to the applicants who came for assistance. Since they could not effectively answer the parents' queries about the new method due to lack of sufficient knowledge, they feel this contributed to some of the parents' lack of trust and confidence in the new system.

- **Inadequate pilot testing of the system**:

It was evident in the responses that most of the interviewees had a feeling that though the system was pilot-tested in 2015, the testing was not adequate enough to pick up potential problems of the system before its full implementation in the whole province. Wider pilot testing in schools of different characteristics and backgrounds was not done especially in remote and township schools for more people to be aware of it and to identify potential hiccups to its full-scale

implementation. Most schools and parents effectively heard of it for the first time in 2016. Interviewees agreed that inadequate pilot testing resulted in the unforeseen system complications as the problem of system overload and huge traffic that caused the system crash in the first two days of the implementation had not been picked up and proactively dealt with before the full scale roll out of the initiative in the whole province. Unlike in the GDE online application initiative, Japan's e-Tax initiative though implemented very quickly, was pilot-tested in the whole town of Nagoya, Japan's fourth largest and most populous city. This made the initiative to be tested on a wide variety of people from different cultural, economic, social as well as educational backgrounds making it possible for the tax agency to have a glimpse of its potential acceptance / rejection and its potential shortcomings before fully implementing it on a national scale. This should be the norm where an initiative affects wide sections of the population with different characteristics.

- **Lack of adequate internet access in schools:**

Internet connection in the schools though available, is not adequate enough to cater for many applicants at a time. The interview responses revealed that most schools were using mobile internet through the use of USB modems that could not connect more than one computer at a time. Hence, one person working with the online applications on one computer would become overloaded with work especially when he/she had to help many parents with the application process. If schools could have better internet connection methods like Wi-Fi this could strongly improve the enrolment process especially for those digitally literate but without resources, they could do it on their own instead of waiting to be served

on one computer. School administrative staff would also be able to share workloads when more can work online at the same time.

- **Problems in user login credentials:**

It is arguable that e-government innovation in the GDE is at the stage of transaction of secure information stage according to the ANAO and SAFAD stage models of e-government. This stage places emphasis on the need for user login credentials in order to access information and services. Hence, service users ought to be well informed on the importance of creating and remembering their usernames / passwords for their continuous interaction and possible transactions with the service provider (Goldkuhl & Persson, 2006:3). However, in this study, most interviewees observed the problem of parents not being able to remember their login details on the day of application. After registration of parent and learner information, most parents did not write down the username and passwords they created for use on logging into the system when they submit applications. This means they had to start the process all over again and it was often difficult because the system would pick up the learner's details from the previous registration and tell the applicant that their information is already registered. This made many parents to be frustrated and to come back to schools for assistance in resetting their passwords as they could not proceed with applications. This again points to the lack of adequate user preparation / training before the implementation of the new system which could have negative implications on the parent community's acceptance of the new system as it made the system to appear very complicated than the old method of applications.

- **Digital illiteracy:**

In his web-based study of e-government in 15 developing countries, Ndou, (2004) observed that there is limited ability of developing countries to reap full e-government benefits, with the key challenge being low literacy levels among citizens. This is often a hindrance to effective e-government adoption. In the South African context, Mphidi, (2009) also found out that a big section (majority) of the citizens is less literate, hence they tend to be less or non-users of internet services. Six years down the line, the problem of low literacy levels still has a grip on the e-government potential of the Sedibeng West District, where a common challenge was observed of many people being digitally illiterate, which made it difficult for them to do the online applications on their own regardless of having smart phones. Hence they had to seek the assistance of others to be able to go through with the applications. It is commendable though, that despite the low digital levels, most parents did not give up efforts to go through with the online applications hence they made use of the online application centres identified by the GDE in their areas.

However, a lot still needs to be done to improve the digital literacy of the citizens if more people are to be seen appreciating of the value of e-services in the district. The level of use for the Internet generally rises with the increase in the standard of education. So as the population gets educated and in particular, in the use of Internet, their buy-in for e-government initiatives will also increase.

**Lack of internet access and necessary technology:**

Most developing countries' efforts to effectively use e-services through e-government are often thwarted by the problem of the digital divide characterised by uneven access to resources and ICT infrastructure among demographically,

economically and socially different populations (Anni, 2016, Matavire *et al*, 2010; Gokmen, 2010; Ndou, 2004). In the Sedibeng West District, it was also observed that most applicants either lacked computer and mobile technology or internet access, and in some cases they lacked both. The administrative staff in the sample gave an indication that they assisted more than 80% of the applicants each to go through the application process except only in school D, an urban school where they assisted only about 20% of the applicants who came for assistance. This is further evidence that the digital divide still has its grips in the Sedibeng West district and this can be a draw-back to the effective use of e-services by the district citizens. Therefore such divide needs to be paid attention to and addressed in order to enable the development of information societies as advocated for by the Department of Public Services and Administration and the national government of South Africa in the country's e-government vision.

- **Applicant apathy:**

One problem that surfaced during interviews with respondents from primary schools was of the widespread apathy among parents / guardians of children who were already in Grade R in the schools under study (School A and C). Most of the parents did not take heed of the call to submit applications for Grade 1 for they assumed that their children are already registered learners therefore they are part of the learners in the schools. For instance, respondent SPA was worried that none of the parents of more than 90 Grade R learners in his school had submitted applications for their children by 25 September 2016 regardless of numerous reminders sent to them by the school. In school C, respondent SPC indicated how most of the Grade R learners from the school failed to secure space in the school as the spaces were filled up by those who had applied in

time while parents and guardians of the Grade R students relaxed thinking their children automatically had space for grade 1. Respondent DMS from the district education office highlighted the cause of this apathy not as resistance by parents to the new system, but as a result of the fact that the parents were not fully informed that Grade R learners were not part of the mainstream learners but they were simply accommodated within the schools, therefore they need to be formally registered for Grade 1. Analysis of this problem again points back to the first challenge, lack of sufficient information for parents.

- **Inconsistency of applicant contact numbers**

The new online application system is a highly interactive system that enables interaction between schools, head / district office and parents. Hence, it is important that parents supply cell phone numbers for SMS notifications to reach them about their applications. However, responses in the interview revealed inconsistency of applicants' contact numbers. Most people who came back to check physically if their children were placed had not received any notification, and on verification of their details it was observed that most of them had changed their cell phone numbers without updating their information on their registration information on their profiles via the GDE portal. Therefore it is important that citizens be informed of the need for consistency in the use of contact information which enables them to remain in contact with service providers in order for them to continue enjoying the benefits of electronic communication about services.

- **Applicant non-compliance**

The majority of the respondents expressed concern over non-compliance by most applicants to the requirements of the GDE regarding those who are offered

space in any school. In the majority of schools, by 25 September most parents had not yet submitted relevant documents and confirmed their acceptance or non-acceptance of the offer of space although it was indicated that they should do so within two weeks of notice of offer from the school. Only in one school, School C had all 140 applicants offered space confirmed their acceptance and submitted relevant documents. **Table 5.4** below shows the estimated enrolments for grade 1 and 8 in the schools under study and the number of applicants who had confirmed acceptance of offer with the schools by the time the interviews were conducted.

**Table 5.4: Confirmed offers against forecasted enrolments by 25 September 2016**

| SCHOOL | FORCASTED ENROLMENT | CONFIRMED /ACCEPTED OFFERS | PERCENTAGE |
|---|---|---|---|
| A | 175 | 36 | 20.5% |
| B | 120 | 25 | 20.8% |
| C | 140 | 140 | 100% |
| D | 240 | 60 | 25% |

- **Wrong placement of learners**

Another common problem that surfaced from the interviews was the placement of learners in wrong schools. Respondents from 3 of the schools under study observed that some learners especially grade 8, were placed in schools that were not compatible with their home languages. For instance, School B which mainly accommodates learners who do IsiXhosa as home language found

learners of Sotho home language being offered space in the school. In School A, learners of Afrikaans home language and who did not reside in the catchment areas of the school were found among those who had been placed in the school. This resulted in applicants raising complaints on the placement criteria and the transfer of these learners to other schools which were not their prior choice. However, the respondents were able to identify one cause of wrong placement as emanating from the fact that there are two schools in the district that have names almost identical to each other resulting in parents picking the wrong school during the application phase.

- **Applicant wrong assumptions about placement:** An observation was made by the respondents that some applicants assumed that being on a waiting list meant that they had already been placed in a school after submitting their applications. This further point to the problem of inadequate information for the parents before the application period kicked off. As a result, some parents came complaining at the schools where they applied from when they realised they had been offered space elsewhere. In one situation, a parent told the school principal (SPC) that she had already started organizing uniforms for her child thinking she already had space only to find out she had been offered space in a different school. This is enough evidence that the applicant was not properly informed and prepared before and during the submission of applications.
- **Complaints about high cost of internet:** A common challenge was brought up by some of the respondents regarding internet costs. They argued that even though the online application system is mobile friendly, most applicants complained that they could not make use of it due data costs that are very high. Quite often applicants were interrupted during the application process when data

got used up before they could complete the application process. This has also been observed by Farello & Moris, (2001), Mphidi, (2009) and Matavire et al, (2010) who purport that accessibility to the internet has also been identified as a major hindrance to effective use of e-government services in South Africa. Furthermore, according to Mybroadband, (2015), it is argued that when it comes to broadband pricing relative to developed countries, South Africa internet rates rank among the most expensive in the world making most of the citizens not to afford it. This may be the reason why some parents opted to use resources in schools to submit their applications even when they had smart phones and other mobile devices that support internet connection.

Interviews provided qualitative data which enabled the researcher to probe further on the actual experiences of those who were handling online applications in the schools. However, depending on the data provided through interviews alone could not effectively answer the research problem. Hence, quantitative data had to be gathered through a structured survey questionnaire for applicants to complement and supplement the qualitative data. The next section therefore presents and analyses quantitative data collected by use of the structured questionnaire.

## 5.3 QUANTITATIVE DATA PRESENTATION AND INTERPRETATION: SURVEY QUESTIONNAIRE

This section presents the results and analysis of the data collected through use of a survey questionnaire sent to applicants for grade 1 and grade 8 learners for the 2017 academic year in this study. The purpose of the questionnaire was to establish the issues of citizens' readiness for e-services, applicants' experience of the application process, capability and willingness of participants to use the system, opportunities and constraints/ challenges, user perceptions of the system

and their suggestions for improvement of the system. There will be an extensive use of figures and tables in the presentation, analysis and interpretation of the quantitative data, based on the questions asked in the structured questionnaire since the researcher used descriptive statistics as a base for analysis of the data.

### 5.3.1 Sample Population Composition

Out of the expected 112 expected questionnaires, the researcher managed to receive back 91 completed ones, representing 81.2 % of the sample. The returned questionnaires had a high representation of people above the age of 17; hence the sample consisted of mostly mature respondents. **Figure 5.5** below shows the age distribution in the sample used in this study.

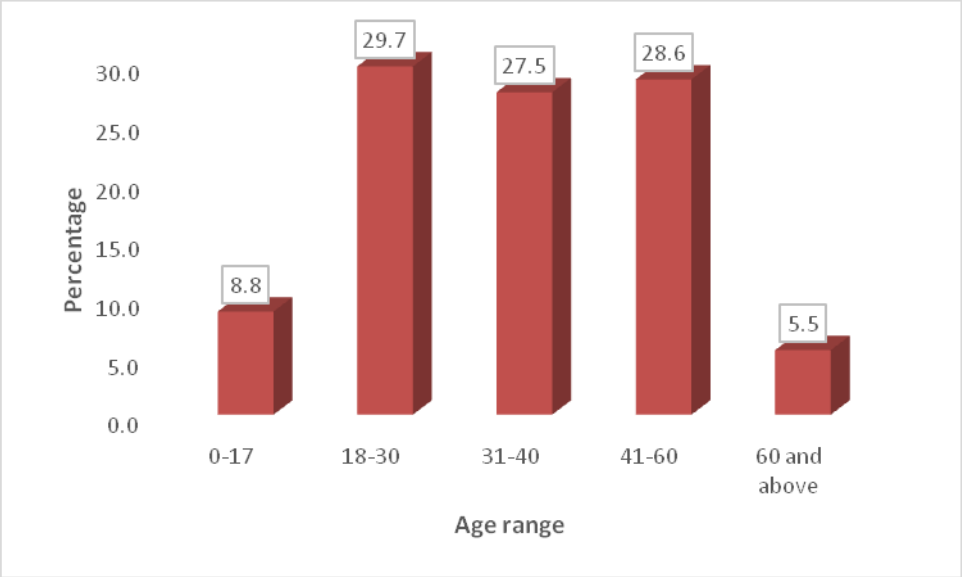


**Figure 5.5: Age distribution in the study sample**

Analysis of the age ranges reveal that on average 85.75% of the parents/guardians in the sample fall in the economically active age 18 -60 years of age while 8.8% and 5.5% of the same sample fall in the 0-17 years and above

age 60 respectively. Thus the majority of the applicants in the district are found within the active age range of relatively mature people.

Lesame, (2015) and Mphidi, (2009) both observed that the largest section of the South African population has mostly low literacy levels that pose a challenge to them when it comes understanding and utilization of e-government services. Although the majority of applicants in the Sedibeng West district are relatively mature, they do not have same levels of educational achievement. Results from analysis of educational achievement levels of the respondents illustrated in **Figure 5.6** below show that the majority of the respondents (54%) reached secondary school level. 24% of the respondents fall at the primary level of educational achievement while a small number (18%) represents university graduates. The results imply that in the Sedibeng West district, most of the citizens (78%) have achieved at least secondary education academic level and above, hence the district citizens are averagely literate. This on its own lays a good foundation for their potential development towards use of e-services.

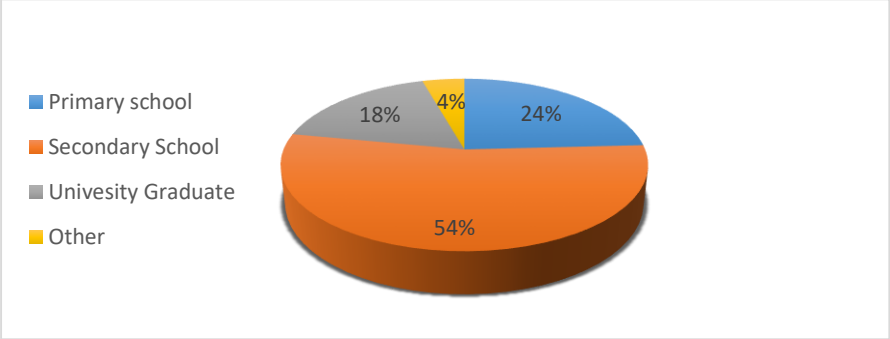


**Figure 5.6: Educational levels of applicants**

### 5.3.2 APPLICANTS' STATE OF E-READINESS.

EIU, (2009:4) defines e-Readiness as a means of determining the fineness of a country's ICT infrastructure and the willingness of its citizens, businesses and government to utilise information communication technologies to their advantage. Hence, in the implementation of the online applications in the Sedibeng West district, the researcher checked the degree of citizens' e –readiness in a bid to establish whether they could easily adopt and use the GDE's e-service. The analysis of e-readiness factors is derived from Section B of the applicant survey questionnaire from question 4-10. Analysis was made of the respondents' digital literacy (computer literacy, knowledge of the SMS technology and their understanding of the internet).

Of all the 91 respondents to the survey questionnaire, 57.1 confirmed being computer literate while a smaller number of 42.9 admitted being computer illiterate as indicated in Figure 5.7 below. It is however important to note that despite having citizens with a general literacy of secondary education level and above, the digital illiteracy levels of the same citizens are still remarkably high and this may be a draw back to the effective use of e-services in the district under study.

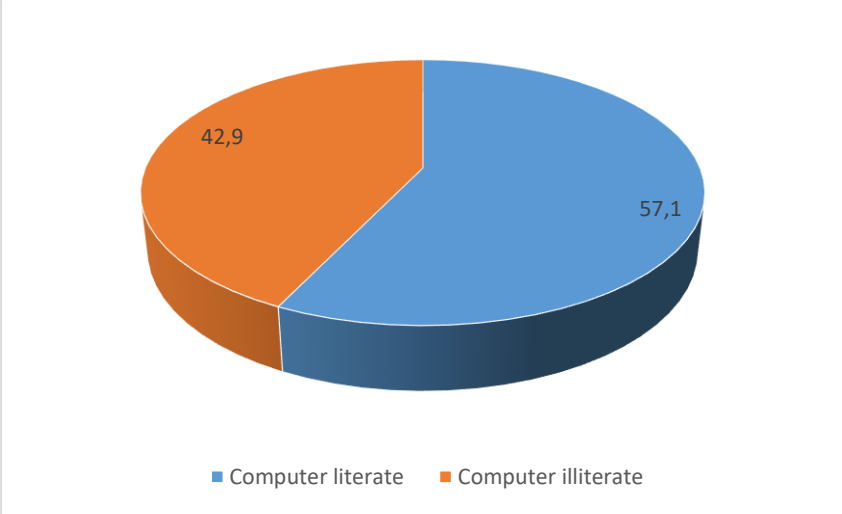


**Figure 5.7: Applicants' computer literacy**

A further analysis of the responses (Figure 5.8 below) revealed that there is a big relationship between a person's level of educational achievement and their computer literacy. 100% of the university graduates indicated that they are computer literate while the majority of those with primary education level of achievement indicated having no computer literacy at all. However, it is important to note that only 17.6 % of the respondents represent applicants who hold university qualifications. The analysis further shows that the majority of the applicants in the district (78%) do not have an academic level of achievement beyond secondary school. This tends to have negative implications on their digital literacy as only half of those who reached secondary level of education confirmed being computer literate. Hence, it can be observed that as a person goes higher on the education ladder, his/her computer literacy also improves. Since most applicants in the sample do not have qualifications beyond Matric, the computer literacy levels in the district are therefore still relatively low, with only close to half of the population having computer literacy. It is possible that some of

them have not had real access to the computer and internet technology both at home and school which may negatively affect their appreciation of e-services. Those with higher level of education tend to be the most users of internet services (Mphidi, 2009); therefore some form of intervention is required in order to improve the general and digital literacy of the district's citizens to a level that can enable them to become active e-service beneficiaries.

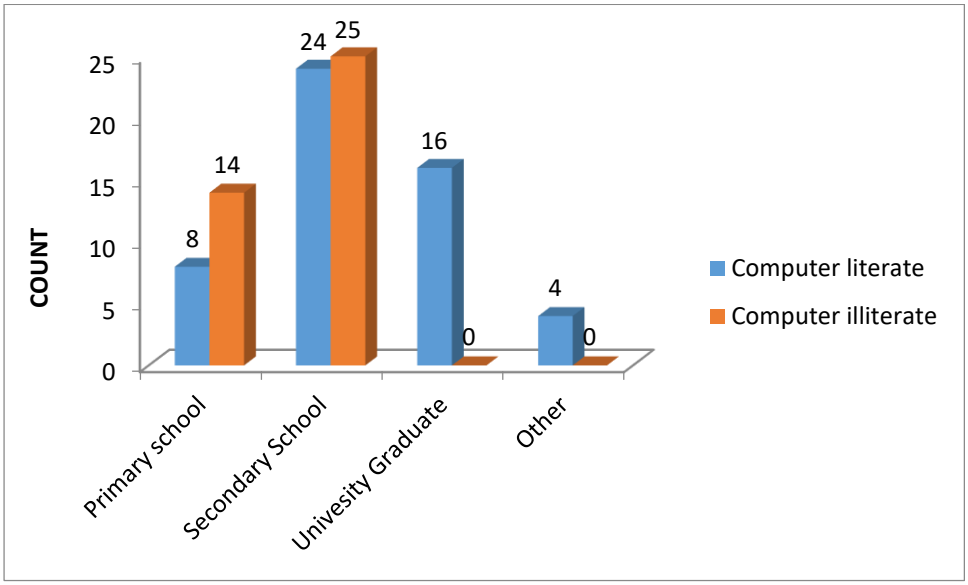


**Figure 5.8: Applicants' computer literacy according to educational achievement**

Results of the analysis also show that most of the respondents who are computer literate fall between the ages of 18-60 as indicated by 46 respondents in that age group who indicated that they are computer literate (see Figure 5.9 below). The majority of the applicants in the district is also believed to be in the same age range of 18-60 as illustrated in Figure 5.5 above, thus it can be agreed that the

majority of the applicants have at least basic computer literacy which is one pre-requisite for online applications to be a success.

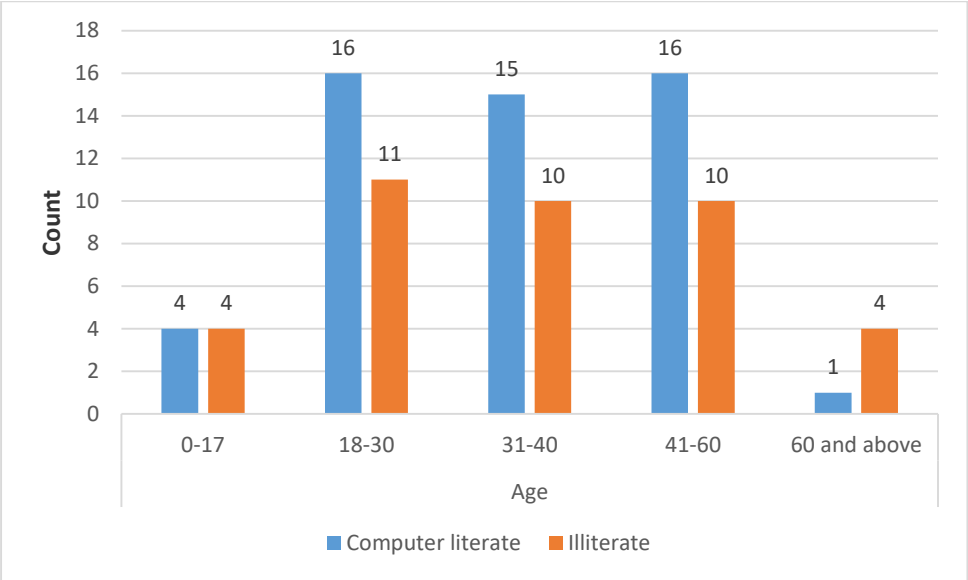


**Figure 5.9: Applicants' computer literacy per age group**

Naidoo, (2007:324) argues that in a country where the majority of the population is challenged by inadequate infrastructure, lack of resources and unequal access of technology, it is difficult to effectively bring e-government to the people. The citizens' e-readiness was thus, also checked to determine their state of e-readiness based on the availability of resources (technology) to the applicants. The results of the analysis are shown in Table 5.5 below where responses to the question on the applicants' access to computers show that 42.9% of the respondents have no access to a computer both at home and at work, hence they have no access at all to the resource. The cumulative percentage of those who have access at home and at work indicates that more than half of the applicants (57.1%) have access to a computer which is a good starting point for them to enjoy e-services from the GDE. However, 42.9% having no access to

computer technology points to the fact that the digital divide is an existing challenge to effective and efficient delivery of services online to the citizens of the district. However, regardless of the disparities in access to resource, it is worth noting that all the applicants managed to submit their applications online, showing that the people in the district were not discouraged from accepting the innovation by their inequalities. The effort made by those without resources is a positive indicator of their need to explore new ways of receiving government services and information.

**Table 5.5: Applicants' source of computer access**

| | Frequency | Percentage | Cumulative Percent |
|---|---|---|---|
| At home | 28 | 30.8 | 30.8 |
| At work | 24 | 26.4 | 57.1 |
| Not at all | 39 | 42.9 | 100.0 |
| Total | 91 | 100.0 | |

The successful adoption of e-services depends a lot on the accessibility of internet to the prospective service users. Analysis of the respondents' internet access was undertaken and the results are presented in Figure 5.10. The results reveal that 42.9% have no access to the internet, 27.5% have access to the internet at home while 29.7 % access the internet at work. Close analysis shows that at least 57.2% of the respondents have some form of internet access, a positive indicator for the implementation of online services in the district. However, the relatively big number of people without both internet access and access to computer technology is further evidence that the digital divide still has

its grips on the citizens of the Sedibeng West district, something that may have a negative impact on their e-readiness and their effective adoption of the online application system (e-services).

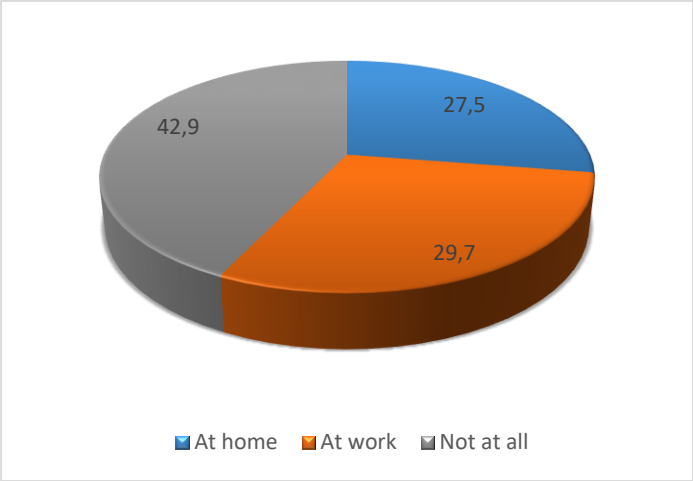


**Figure 5.6: Where applicants access the internet**

Gokmen, (2010: 31) asserts that sufficient technological infrastructure should be built to enhance e-government transformation. The researcher further analysed the respondents' most available alternative source of internet connection, the results of which are shown in Figure 5.11. Out of the 91 respondents, 48.4% indicated the availability of internet cafes while 16.5% of the sample gave an indication of the availability of free Wi-Fi in their local communities. 35.2% of the respondents however indicated that both free Wi-Fi and internet cafes do not exist in their communities, this being another element of the digital divide making them more disadvantaged in terms of internet access as compared to the other communities in the same district. This leaves such with the option for mobile internet connection or asking for assistance from those with the resource if they are to enjoy equal benefits of e-government services offered by the GDE. Thus,

in the Sedibeng West district at present there is no sufficient enabling ICT infrastructure for effective delivery of e-services as promised in the GCR e-government strategy. Intervention is needed in the area of ICT and internet infrastructure development that will improve accessibility of e-services in the district in order for the citizens to reap full benefits of e-government transformations.

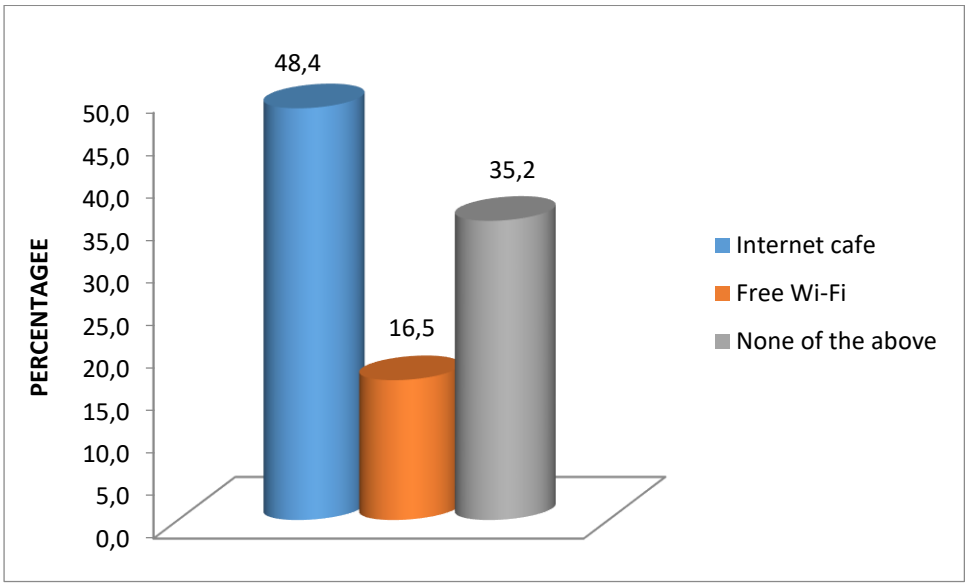


**Figure 5.7: Applicants' most available internet source**

Further analysis of the most available sources of internet connection was done based on the different residential areas of the applicants. As shown in table 5.6 below, people from townships and informal settlements are the most affected when it comes to internet access. 24 out of the 64 respondents, (about 42%) from the townships and 100% of the applicants from the informal settlements, indicated having neither internet café nor free Wi-Fi in their local communities making them more disadvantaged when it came to making use of the online applications. Since the Sedibeng West district consists mainly of township settlements, it is highly likely that a large section of the population is

disadvantaged when it comes to use of e-services like the online application system.

**Table 5.6: Most available internet source per georaphical area**

| AREA OF RESIDENCE | MOST AVAILABLE SOURCE OF INTERNET | | | TOTAL |
|---|---|---|---|---|
| | INTERNET CAFE | FREE Wi-Fi | NONE OF THE ABOVE | |
| Rural area | 3 | 1 | **0** | 4 |
| Urban | 12 | 6 | 3 | 21 |
| Township / Peri-urban | 29 | 8 | 27 | 64 |
| Informal settlement | 0 | 0 | 2 | 2 |
| Total | 44 | 15 | 32 | 91 |

For e-government implementation to be successful there is need for potential users of the e-government services to understand and be able to interact with service providers over the internet. Therefore, in questions 4 and 5, the researcher sought to find out the respondents' understanding and use of the internet on a personal level. This would help determine how well equipped the citizens of the district under study are to engage in electronic services like the GDE online applications.

**Table 5.7: Applicants' knowledge of internet use**

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|
| Yes | 52 | 57.1 | 57.1 | 57.1 |
| No | 39 | 42.9 | 42.9 | 100.0 |
| Total | 91 | 100.0 | 100.0 | |

Results of the analysis of the respondents' ability to use the internet in general reveal that slightly above half of the respondents (57.1%) have the understanding and ability to use the internet while a relatively big number of respondents (42.9%) confirmed not having understanding and ability to use it. With most governments including South Africa, taking a great shift towards e-government, the results of the analysis as presented in Table 5.7 above should give great insight into the GDE's decision-making regarding the delivery of educational services electronically to the citizens of the Gauteng province and the Sedibeng West district in particular. Although the majority declared having full understanding and ability to use the internet technology at a personal level, the percentage of those who do not understand the technology in the sample is quite high. This really requires some form of intervention by various stakeholders to improve the digital literacy levels of the citizens if the e-government pathway is to be successfully implemented and adopted by the district's citizens

Almarabeh and AbuAli, (2010:30) assert that e-government involves the employment of information and communication technologies to enable citizens and businesses to interact and do business with government through the use of different electronic media in the form of telephone, touch pad, fax, smart cards, self-service kiosks, e-mail, internet and other mobile digital technology. Since the GDE online application system is mobile friendly, it was important to assess the applicants' knowledge of mobile technology namely mobile internet browsing to see if they can benefit from this knowledge in accessing information and services from the GDE. Analysis was also done of the applicants' knowledge and understanding of the SMS technology which is the most used method of communication with applicants in the online application process.

Figure 5.12 depicts the ratings for the respondents' knowledge of mobile internet. About 32% of the respondents indicated that they do not have knowledge and understanding of the mobile internet technology while 18.7% confirmed having a bit of knowledge, though poor. 27.5% of the respondents declared having good knowledge of mobile internet and about 15% indicated that they have excellent knowledge. In total, 46.2% of the sample has at least good knowledge level of mobile internet, which amounts to less than half of the sample population. This indicates that in the Sedibeng West district, the majority of the citizens lack sufficient knowledge of the mobile internet technology for them to use it as an alternative method of submitting online applications since less than half of the total sample confirmed knowledge and understanding. Training is required in the use of mobile internet to improve the citizens' use of the technology to access services and information online.

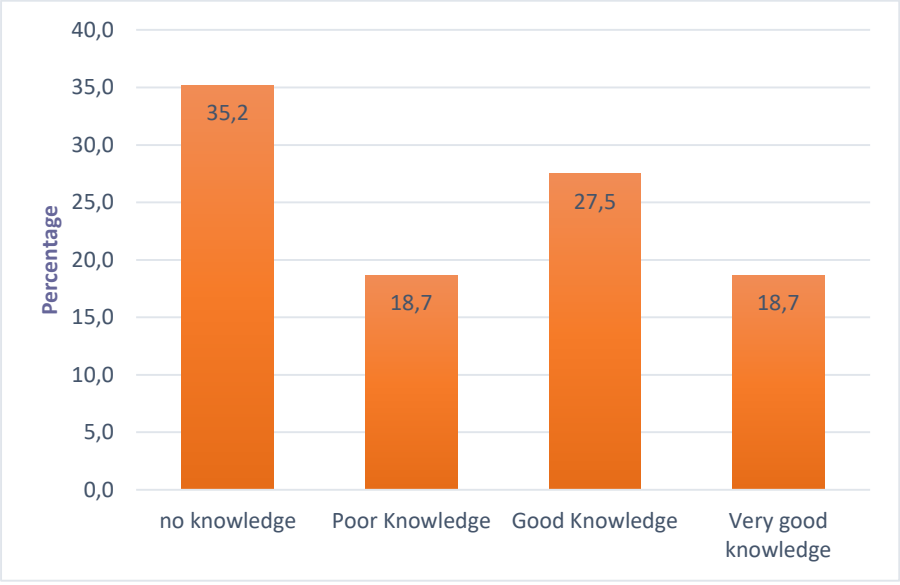


**Figure 5.8: Applicants' knowledge of mobile internet**

The concept of e-government is not only involves providing of information and services exclusively over the internet but also involves all electronic means by which information and services may be made accessible to government and to its interested parties namely the citizens, employees, businesses and other government agencies (Dawes, (2002: 1). It was therefore important to check such knowledge among the Sedibeng West citizens as the SMS technology is the main method of communication used by the GDE to provide feedback to applicants during the application process. The analysed responses show the majority of the respondents (60.4%), as having very good knowledge of the SMS technology, 23.1% with good knowledge, 11% as having knowledge, though poor and only 5.5% as having no knowledge at all of the technology. In total it can be argued that at least 83.5% of the Sedibeng West district citizens have a good to excellent knowledge of the SMS technology. This analysis deduces an average SMS skill level of 3.38 per citizen from the Sedibeng West district which translates to good knowledge according to the researcher defined scales of 1=poor up to 4=excellent knowledge. Thus, it can be said people in the Sedibeng West district have the potential to receive and understand the GDE's communication and feedback electronically via the SMS technology. The results of the analysis made on the respondents' SMS knowledge are presented in Figure 5.13 below

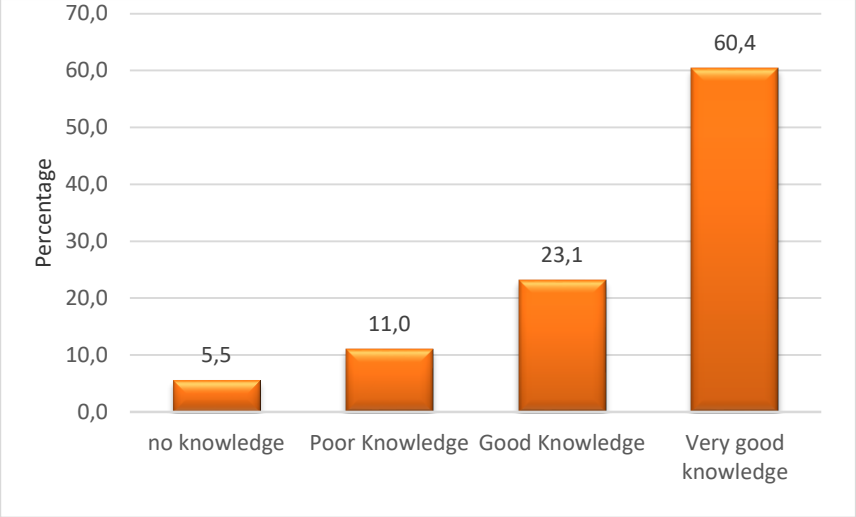


**Figure 5.9: Applicants' knowledge of SMS technology**

### 5.3.3 THE GDE ONLINE APPLICATION PROCESS.

This part of the analysis is derived from Section C of the questionnaire, covering responses for question 11-17. The data presented and analysed is based on the respondents' understanding of and interaction with the GDE online application system as well as the results of their applications submitted online during the period 11th of April to 30 June 2016.

Figure 5.14 presents the statistics of respondents who applied for grade 1 and 8 via the online application process. The results show that the sample consisted of more applicants for Grade 1 (54%) as compared to Grade 8 applicants who constitute 43% of the respondents. A closer look at the percentages of applicants indicates that the Sedibeng West district has relatively high numbers of both potential grade 1 and grade 8 learners who were supposed to be placed in schools for the 2017 academic year. They also reveal that Grade 1 applicants were more responsive to the call for online applications than the applicants for grade 8.

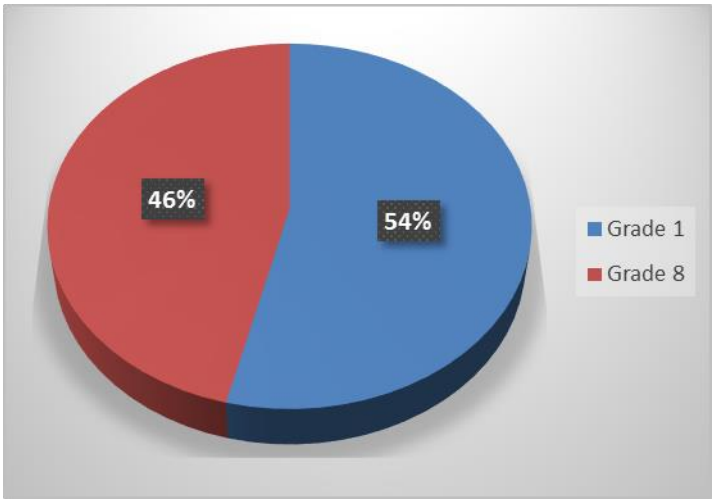


**Figure 5.10: Statistics of Grade 1 and Grade 8 applicants in the sample**

Rogers, (1962) is of the view that diffusion of innovation is affected by the communication channel through which information about the innovation is passed to the expected users and adopters. This means information is an influential element in the successful implementation of any new e-government initiative. Therefore, the researcher sought to find out if citizens of the Sedibeng West district, who are potential users of the GDE's online initiative, knew about when and where to submit applications and if they had received sufficient information about the application process and procedures prior to the roll out of the online applications.

Figure 5.15 presents the analysis of the respondents' knowledge of when and where to submit their applications for their children's space. 69% of the respondents confirmed having had knowledge before the roll out of the applications while 31% from the same sample gave an indication that they did not have any information about when, where or how to submit their applications till they heard of it after the roll out. The results imply that many people in the Sedibeng West district had enough information about the new initiative which

made it possible for them to apply in time. This further reveals that though not all people had knowledge and information of the new school admission system, information had been disseminated beforehand to potential applicants with regards to when and where to apply. This agrees with the responses of interviewees who mentioned having disseminated information to parents through circulars, newsletters and general school meetings before the roll out of the new system. Hence it can be argued that dissemination of information was done about the initiative though not all applicants got the information regardless of being members of the same communities with those who had received the information. This may confirm one of the challenges raised by school principals and administrative staff, of parents not attending school meetings, ignoring circulars from schools or children not handing the circulars to parents which resulted in some parents missing the important information.

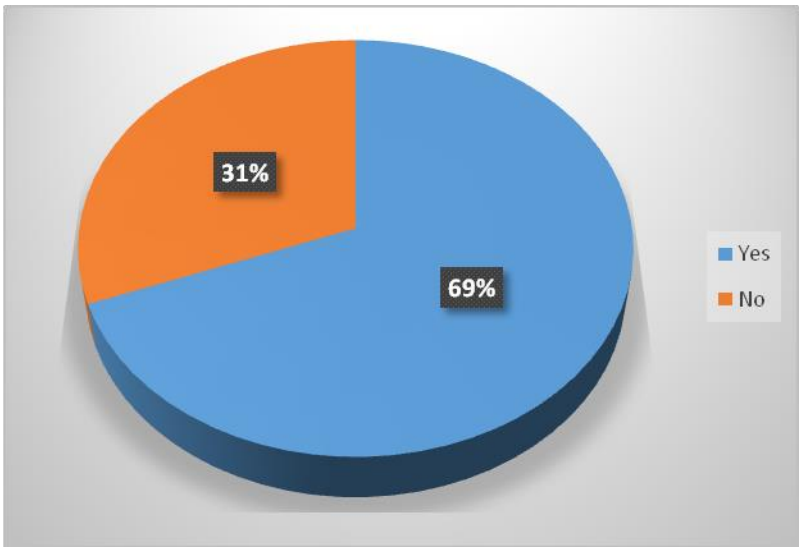


**Figure 5.11: Applicants' knowledge of application venues and date**

The researcher also checked if the applicants were well informed and knowledgeable of the real process to follow in submitting their applications before

the application period started. As shown in Figure 5.16, the analysed responses to the question about sufficiency of information about the application process itself provided before the roll out of the applications show the larger segment of the sample (72.5%) as confirming that they had received information which enabled them to go through the application process. This further confirms that information was given to the citizens regarding the new online applications process. However, 27.5% had the view that there was no sufficient information given to them before the application period therefore they were not well informed of the procedures which gave them some challenges when they were applying for their children. This implies that although information was provided, some among the citizens did not quite understand it without being actually given some form of training towards understanding the new application process. Hence the World Bank (2002) emphasised capacity building and user training as pre-requisites for effective e-government implementation.

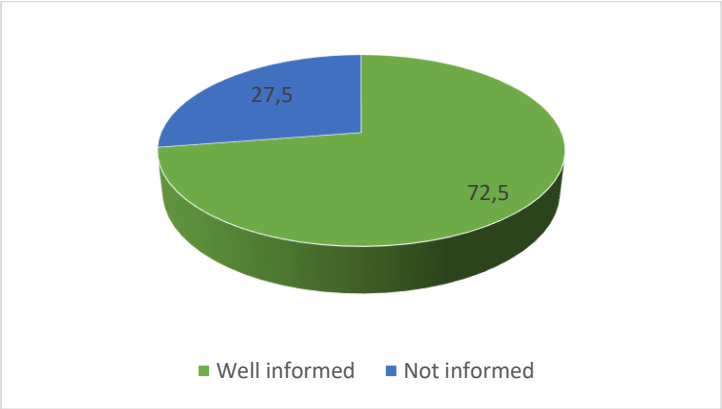


**Figure 5.12: Rating on sufficiency of information on the application process**

The question of accessibility of resources to citizens usually pops up whenever a new e-government initiative is introduced. Table 5.8 below presents the findings

on the different ways in which applicants submitted their applications online during the application period.

**Table 5.8: How applicants applied online for space**

| How application was done | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|
| From my own computer | 9 | 9.9 | 9.9 | 9.9 |
| From my Cell phone | 21 | 23.1 | 23.1 | 33.0 |
| From a computer at my workplace | 15 | 16.5 | 16.5 | 49.5 |
| From a computer at a local school | 46 | 50.5 | 50.5 | 100.0 |
| Total | 91 | 100.0 | 100.0 | |

The analysis above shows that 33% of the applicants made use of their own resources, (own computers, smart phones and internet connection) to complete the application process. 16.5% of the respondents used computer and internet facilities at their workplaces while the majority of the applicants (50.5%) had to make use of facilities at local schools in order to register their details and submit the applications online. From these different percentages it can be observed that people in the Sedibeng West District lack the necessary resources and requirements for effective use of e-services, in the form of hardware, internet access and / digital literacy. This shows more evidence of the inequalities in terms of access to digital technology that still affect the Sedibeng West district citizens. The researcher feels these inequalities need to be addressed by different stakeholders for the shift to e-government to yield better results for government service delivery in the district under study.

Statistics shown in Figure 5.17 below present the respondents' online application process knowledge. It is worth noting that the difference between those who knew how to apply online on their own and those who did not know is not very big, only a 7.6% difference. While 46.2% of the respondents had the knowledge of how to do their own online applications, 53.8% of the applicants did not have the knowledge of how to apply on their own. Again a digital illiteracy problem is evident as most of the applicants showed inability to use online system. It is evident that these people who could not do applications on their own are the majority of the people who went to seek assistance at local schools or application centres. The researcher believes some form of training in the application process could have given some of the applicants' confidence to do applications on their own, thereby reducing the numbers of people who had to seek assistance at local schools and increasing the number of people who submitted applications in time.

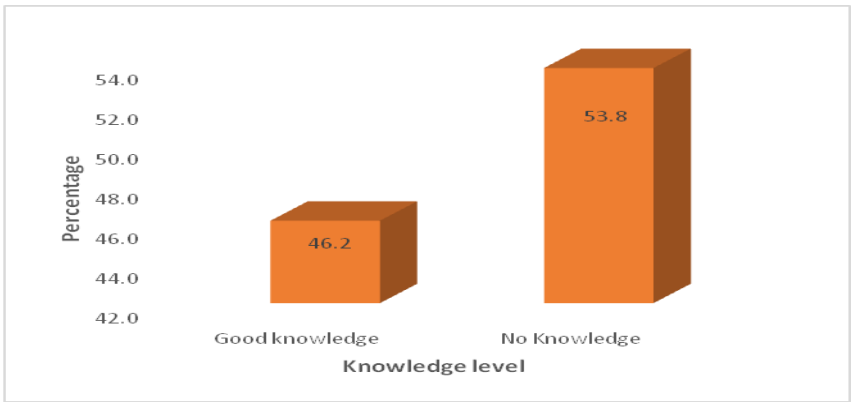


**Figure 5.17: Applicants' online application knowledge**

Figure 5.18 below further shows the distribution of applicants who were assisted in submitting their applications online and those who did it for themselves. Again, a larger percentage (73.6%) indicated that they got assistance from another person to complete and submit their applications while a smaller number

managed to do the applications on their own. It might be that those who were assisted lacked the digital literacy required for them to be able to work online or because they did not have relevant resources for them to go through the application process. Either way, this is evidence that more needs to be done to improve the e-readiness of the district's citizens so that they can readily accept the shift from traditional service delivery methods to online government services.

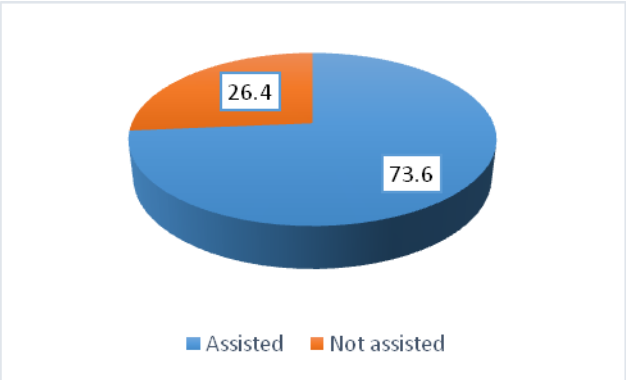


**Figure 5.18: Statistics of applicants assisted in the whole application process**

Further analysis shows that most of those who were assisted are found across all the areas of residence not in a particular area, showing that the problem of resources and digital literacy is common to most people of the district under study, not in a particular area as shown in Figure 5.19 below. However, applicants from township represent the biggest number of people assisted in the application process. This cannot come as a surprise since the biggest population of citizens for the Sedibeng West District if mainly found in the townships and former informal settlements.

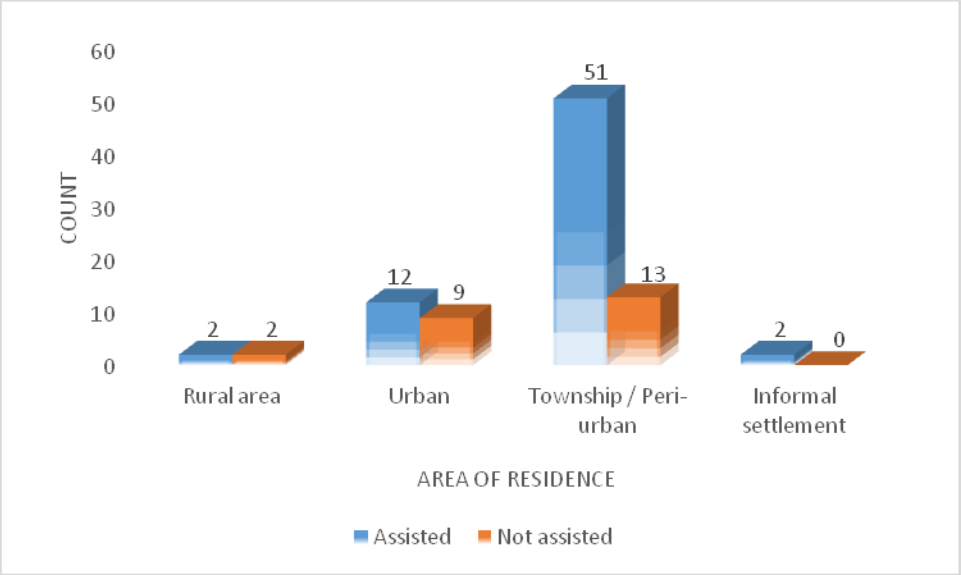


**Figure 5.19: Distribution of assisted applicants per geographical area**

The problem of either resources or digital illiteracy or both, also spreads across people of different age groups in the same district of study as illustrated in Figure 5.20 which presents the frequency distribution of people assisted in the application process by age group. The results of the cross tabulation of age and assisted applications reveals that in each of the four age groups of the applicants, the biggest number of respondents were assisted in submitting their applications. The cumulative frequency of those who were assisted from all the age groups (67 respondents) outnumbers the cumulative frequency of those who did their own applications (24 respondents) across the age distribution. This is an indication that a lot still needs to be done to improve digital literacy and access to digital resources to citizens in order to achieve efficient and effective use of e-government in the delivery of services in the Sedibeng West District.

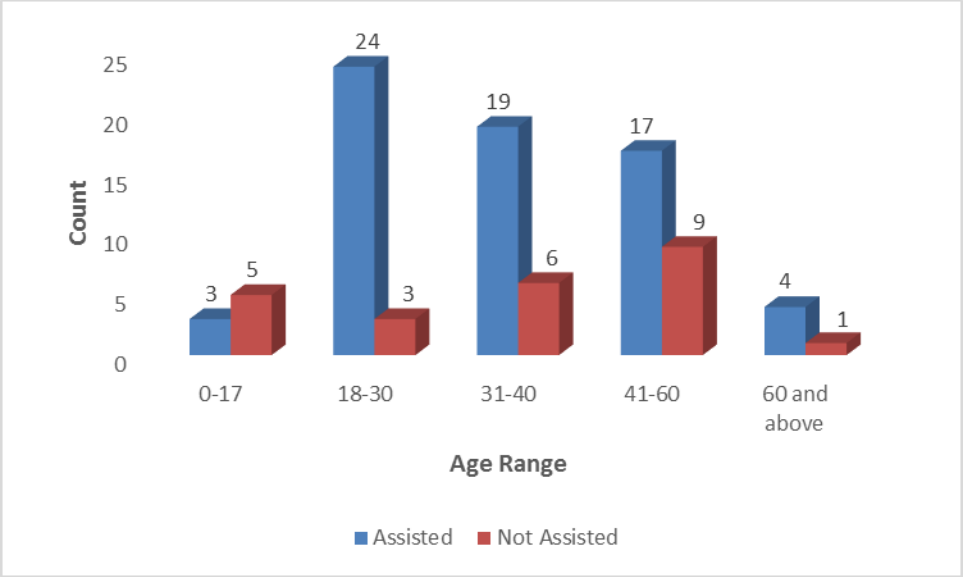


**Figure 5.20: Age distribution of assisted applicants**

It is however important to note that regardless of the problems of resources and digital literacy among the applicants, 100% of the respondents in the sample managed to submit their applications online before the 30 June 2016 cut-off date for applications. The GDE acted proactively by ensuring the availability of trained administrative staff in all schools and application centres who helped those with problems in the application and ensure that none is affected by digital exclusion.

Figure 5.21 below presents the respondents' perceptions of the administrative staff's willingness to help during the application process. While respondents expressed different sentiments, the majority of them (82.4%) do agree that the staff in schools and district office were very helpful and prepared to assist disadvantaged applicants. 8.8% however, tend to disagree with the majority and believe that the staff was not so keen to help. Another 8.8% chose a neutral stance to the question most probably because they had not completed the applications in any local schools but either at home or work making it difficult for

them to rate the staff. Regardless of the differences in perceptions though, it is evident that the majority is satisfied with the degree of help they received.

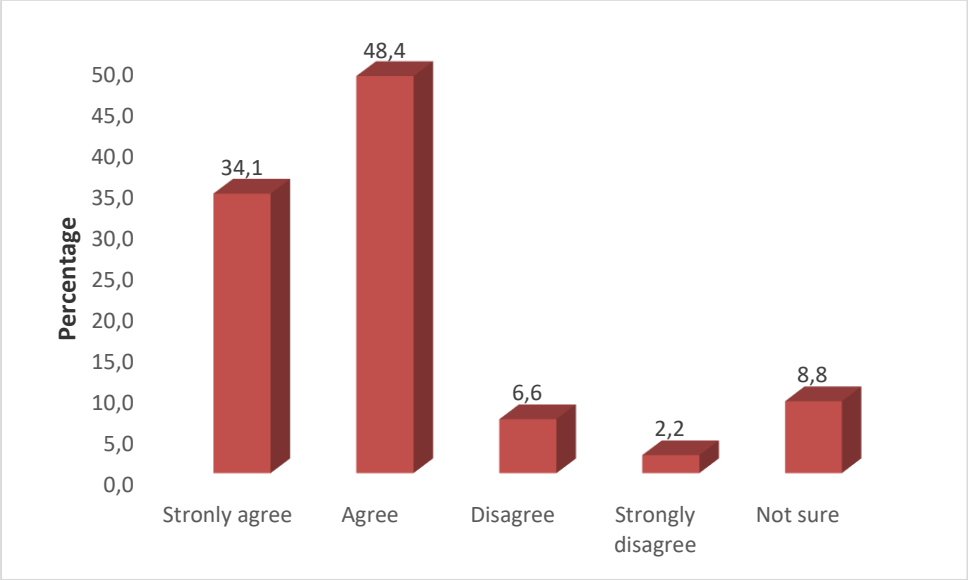


**Figure 5.21: Applicants' perception of the administrative staff's helpfulness**

The big percentage of applicants who submitted their applications using resources at local schools (Table 5.5 above) as well as the identification of online application centres in the district (Table 5.3 above) point to the fact that there were staff members in the schools with enough knowledge of the application system showing the GDE's preparedness to deal with some of the e-readiness factors that might affect the new initiative.

### 5.3.4 THE LEARNER PLACEMENT PROCESS

One reason for the implementation of the online application system was to ensure that as much learners (Grade1 & 8) for the academic year 2017 are placed in schools by the 7th of September 2016 in order to reduce congestion of walk-in applicants at the beginning of the 2017 academic year (Lesufi, 2016). To check if this objective was being achieved in the Sedibeng West District, an

analysis was undertaken of the number of applicants from the sample who had received offers of space in public schools by 30 September 2016, the month in which most learners were expected to be placed in schools. Statistics of applicants from the sample who had received offers of space are shown in figure 5.22 below. The analysis shows that by the date in question, 83.5% of the respondents had already received an offer of school space for their children while only 16.5% had not yet received a response to their applications.

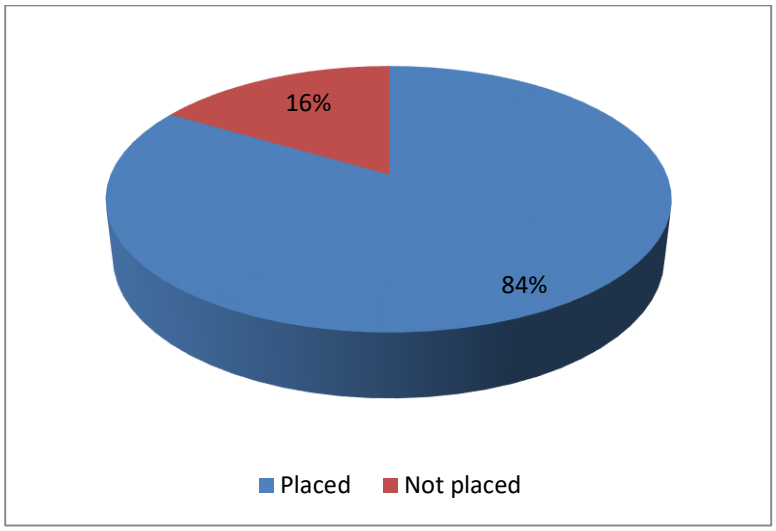


**Figure 5.22: Percentage of learners placed in schools by 20 September 2016**

It can therefore be observed that there was a possibility of having more than 80 % of the potential grade 1 and 8 learners being placed in schools in the Sedibeng West district before the beginning of the 2017 school year if all applicants had complied with the admission requirements and due dates.

Further analysis of school space offers by respondents' area of residence is shown in Figure 5.23. The results of that cross-analysis show that the majority of respondents from all residential areas namely urban, townships, rural and

informal settlements had already received an offer of space in either a public primary or secondary school for their children. Since the Sedibeng West District is made up predominantly of townships and a few urban settlements, the highest number of respondents (54) who got space for their children is found in the townships, followed by 17 applicants from the suburbs who had also received offers of space. This data clearly shows the impartiality of the new admission process as people of different backgrounds are seen to have been treated equally. Both township and urban learners were placed in the different schools at the same time thus ensuring that schools are equally catered for in the enrolment process. As such, the problem of some schools having very low enrolments at the beginning of the year which used to be a norm in the old system of admissions is likely to be reduced in this new application system as the GDE makes sure learners are fairly distributed across the district's schools. Out of the total of 91 respondents, only 15 respondents had not yet received notification on the status of their applications. The reason for their lack of placement might be due to reasons like not meeting the criteria of placement used by the GDE, for instance applying in schools that are not in the proximity of their areas of residence.

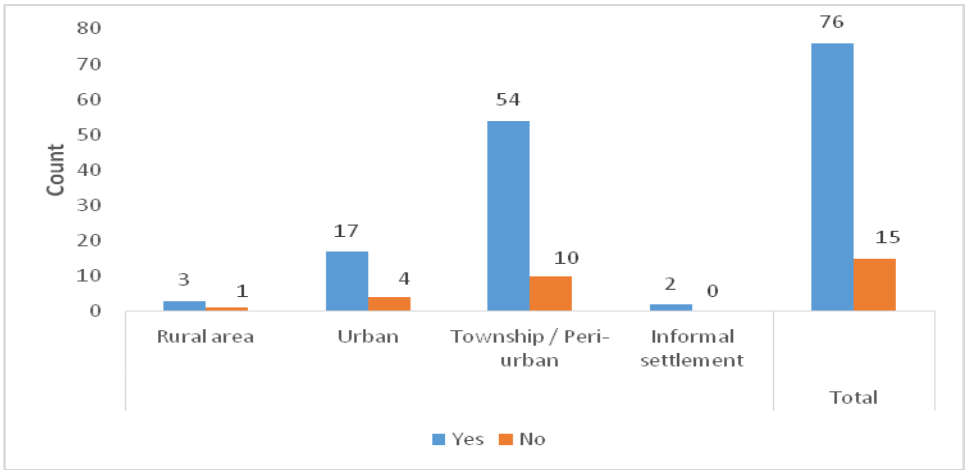


**Figure 5.23: Offers of space received per geographical location**

E-government is well renowned for its potential to speed up processes and provide quick feedback / information to the service users (Chatfield, 2009; Anni, 2016, World Bank, 2002). To check the online application system's efficiency and speed of service delivery, the researcher checked when most of those who had been offered space received notification about the offer of space.

Table 5.9 below shows the different months in which respondents received notification of successful applications. The data in the table shows that by July, barely one and a half months after the rollout of the online applications, about 34.1% of the respondents had already received offers of space, 14.3% received notification in August while 35.2% received offers of space in September 2016. In total, at least 83.5% of the respondents representing the majority had received offers of space for their children by the end of September 2016, a good sign that the objective of placing many children in schools before the new academic year was already yielding positive results in the Sedibeng West District. 16.5% of the respondents did not give any indication of when they received notifications which might mean they had not yet received the offer of space, corresponding with the

data revealed in Figure 5.23 above about those who had not yet received offers of space, which is a relatively small part of the population.

**Table 5.9: Month in which offer of space was received**

| Month | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| | July | 31 | 34.1 | 40.8 | 40.8 |
| | August | 13 | 14.3 | 17.1 | 57.9 |
| | September | 32 | 35.2 | 42.1 | 100.0 |
| | Total | 76 | 83.5 | 100.0 | |
| Missing | System | 15 | 16.5 | | |
| Total | | 91 | 100.0 | | |

The successful delivery of electronic services depends upon the effective use of a variety of ICT to deliver information between the government agencies, citizens and businesses ((Haque & Panthrannarakul, 2013; Brynard, 2002). Figure 5.24 is a presentation of the different ways in which the GDE communicated with respondents after the submission of applications. 82.4% of the respondents indicated that they received feedback via the SMS technology while 5.5% said they got information via email. 6.6% did not receive any electronic communication but they decided to go and physically check at the schools to get feedback on their applications. 5.5% of the respondents declared that they never received any form of feedback on the status of their applications. The cumulative percentage, 87.9% of respondents who received feedback electronically is evidence that the GDE online application system is highly interactive and has the potential for efficient, effective and speedy information delivery to stakeholders which in turn improves the service delivery to the citizens in the Sedibeng West district. It is also evident that mobile technology is playing a significant role in the GDE's e-government initiative as most of the communication with applicants is mostly through the SMS technology, which is an affordable technology to the majority.

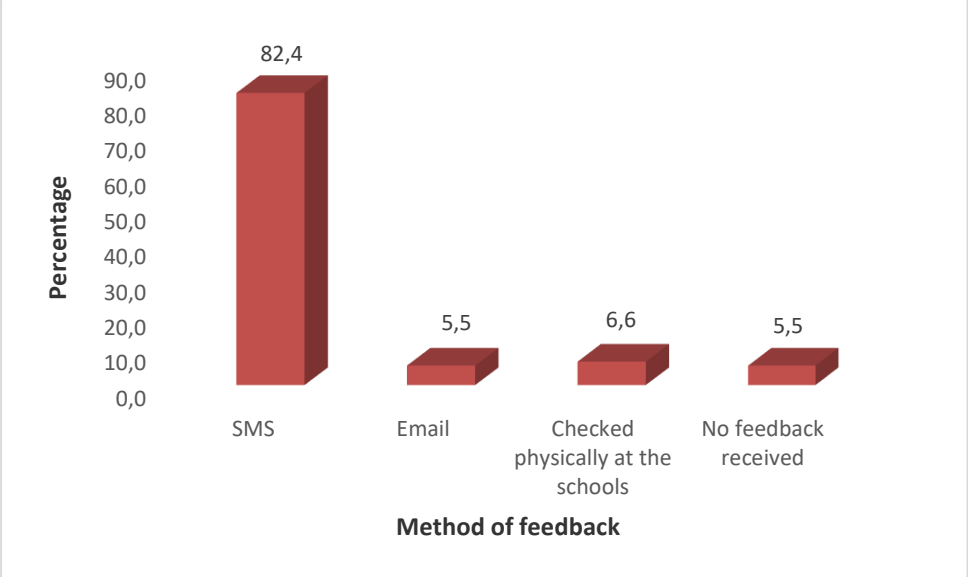


**Figure 5.24: Feedback methods used by the GDE**

Rogers, (1962) in the Diffusion of Innovation Theory argues that the acceptance of an innovation by potential users lies in the compatibility of the initiative with the needs and values of the users. One need of parents when applying for school space is to have their children placed in schools of their choice, which usually have some benefit one way or another for them. Question 21 of the questionnaire sought to establish if learners were offered space in schools of their parents' or guardian's first choice. Analysis of the responses (Figure 5.25) reveals that 83.5%, being the majority of the respondents confirmed that their children were offered space in the schools they had given first preference while 16.5% of the applicants said their children were denied space in the schools they had indicated as their first choice.

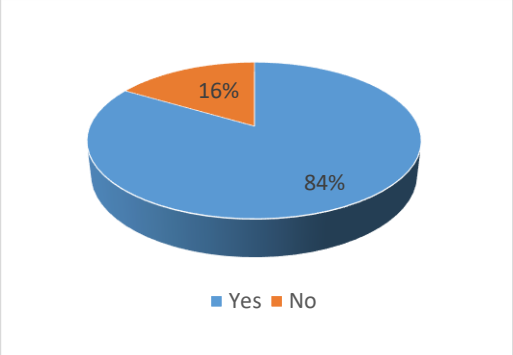


**Figure 5.25: Offer of space in applicant's school of first choice?**

The researcher observed that the majority of respondents from all four different residential were offered school space in their first choice meaning that they are happy about the criteria used for the placements, that is, placement by area of residence. Table 12 below presents the results of the cross tabulation of first choice offer against applicants' area of residence. Although the majority of applicants across all residential areas were satisfied by the placement of their children in schools, 15 respondents could not secure space in their first choice schools. This could probably be because they applied for space in schools where they did not meet the placement criteria. For instances, it may be they out applied of their localities or in schools that did not offer their home language.

**Table 5.10: Analysis of offer of space per residential area**

| Area of residence | | Offer received from school of own/ first choice? | | Total |
|---|---|---|---|---|
| | | Yes | No | |
| | Rural area | 4 | 0 | 4 |
| | Urban | 15 | 6 | 21 |
| | Township / Peri-urban | 55 | 9 | 64 |
| | Informal settlement | 2 | 0 | 2 |
| Total | | 76 | 15 | 91 |

One of the GDE's requirements for applicants is that after receiving an offer of space, the applicant should within 14 days confirm acceptance of the offer and submit relevant documentation at the school. Analysis of the applicants' response after receiving offers of space was done and results thereof are presented in Figure 5.26 below. The analysed data shows that of the 76 respondents who received offers of space, 9.9% responded by accepting the offer online on the GDE website, 63.7% went to the school offered to accept the offer while 11% did not take any action. The analysis shows that 14 respondents occupying 15.4% of the sample did not respond to the question in the questionnaire. This probably means they again fall among the respondents who had not yet received offers of space in any school. There is evidence that the majority of applicants in the Sedibeng West complied with the GDE requirement of confirming acceptance of the offer and submitting relevant documentation to the schools since the cumulative percentage of those who confirmed physically and online (73.6%) represents the majority of the respondents.

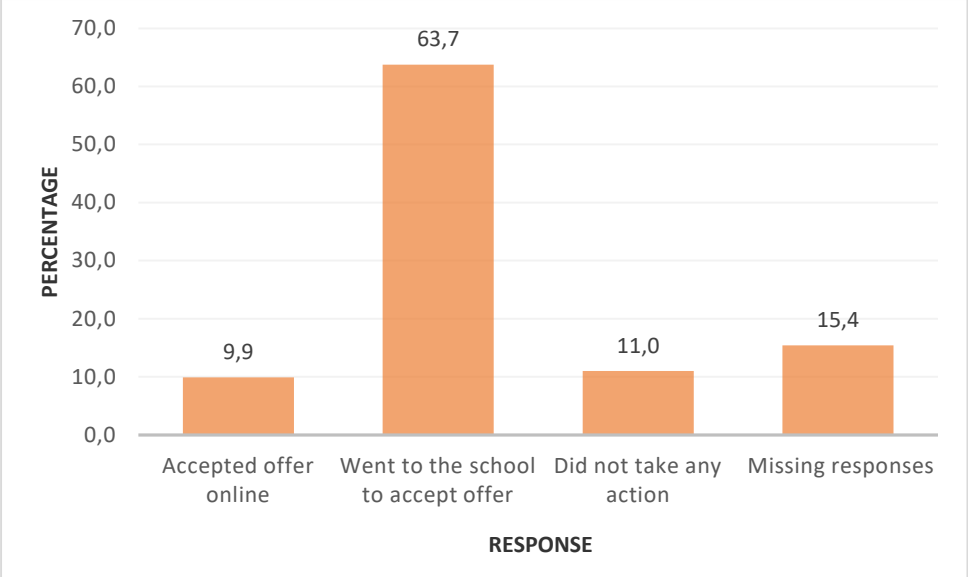


**Figure 5.26: Applicant's response after receiving notificationof space offer**

The compliance rate of the applicants is a positive thing as this gives the GDE and school management teams an indication of actual enrolments and direction as to whether they should stop accepting applications or not in particular schools. Those who did not take action however, affect the admission process in that it leaves the schools that offered them space in a situation where they are do not have the actual enrolment information resulting in delays in finalizing the enrolment process. The number of offers sent out may not represent the actual enrolment at the moment as there will be no proof of whether these people will be in the school or not. In such situations, the likelihood of having people enrolling at the beginning of the academic year is high if these people who did not confirm acceptance of offer fail to turn up on opening day leaving the schools under-enrolled. Non-compliance to the confirmation requirement thus jeopardised the enrolment process to some extent and stern measures have to be put in place in future to ensure that people comply and confirm acceptance or rejection of offers in the minimum acceptable time.

David Barn, an IBM Executive, argues that transformation to e-government would help improve employee productivity, transparency and accountability, reducing duplication and better management of data, (UNDP, 2001). Quite often, the efficiency and effectiveness of the old learner admission processes were marred with the problem of learners being enrolled in more than one school as parents dropped applications in more than one school manually. This in the end deprived some learners learning space as schools would have had their spaces full and some parents never saw the need to reject one of the offers before the beginning of the academic year.

The researcher therefore sought to establish the capability of the new online application system to reduce duplication of enrolments and manage learner admission data. Respondents were therefore asked to indicate the number of schools they were offered space in after submission of their online applications (Question 32) and the analysis of their responses is displayed below.

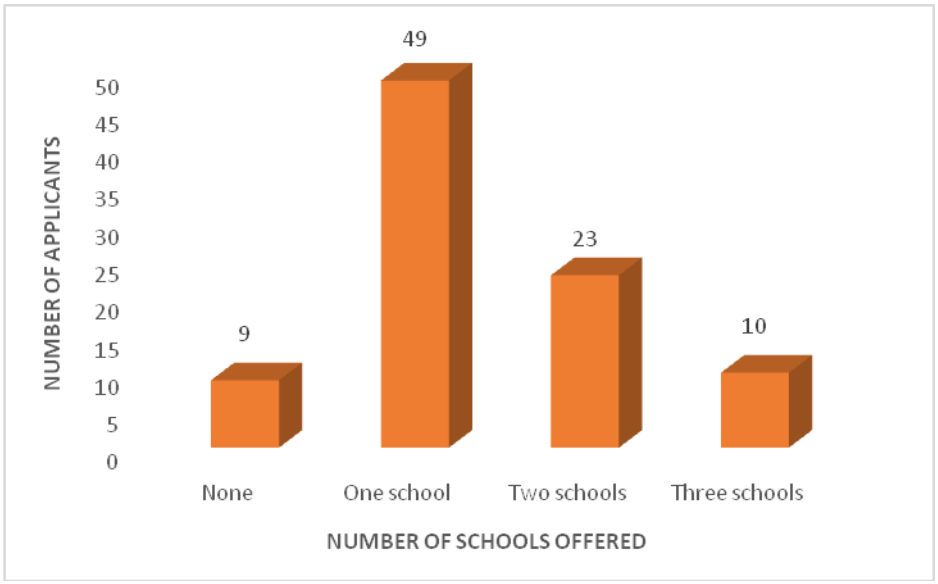


**Figure 5.27: Number of schools offered per applicant**

The data presented above shows that the majority (49 respondents) were offered space in only one school. However, 23 applicants got offers of space from two schools for one child while 10 applicants got space for their children in 3 schools per child. Simple calculation of those who got offer of space from two schools reveals that the 23 learners offered those spaces prevented 23 other potential learners to be placed in those schools while those who got 3 offers of space occupied space that could accommodate 20 learners' placements. This means that the problem of more than one enrolment per learner was not totally eradicated by the new system as it failed to pick information of learners already placed in schools and continued sending the applicant more offers. The researcher believes this affected the possibility of placement of other learners as more spaces were occupied by one learner and this could result in some learners having to still wait until the beginning of the academic year to be placed in schools. While the new online application system has shown positive results so far in the district, more can still be done to improve its efficiency in eradicating duplication of enrolments in future.

### 5.3.5 Respondents' perception of the new online application and learner admission method.

The manifestation and sustainability of innovation vary subject to the nature of its adopters and how they perceive the innovation (Rogers, 1962). The perception that potential users might have of any new way of doing things is greatly influenced by a variety of factors. Such factors include the degree of complexity of the new initiative as compared to the old way of doing things, the relative advantage brought by the new initiative to the user, the compatibility of the new initiative to the values and needs of the users, among other factors (Davis, 1989; Rogers, 1962) These factors are controlled / affected by variables like levels of

training received by users as well as the system design of the new initiative. The factors may determine to a greater extent the attitude / perception that people will have of the innovation and their readiness to adopt it.

In trying to understand the Sedibeng West district citizens' perception of the GDE online application system, the researcher checked the respondents' perceptions based on the system's perceived usefulness (PU), perceived ease of use (PEOU), the applicants' perception of the language of communication, their rating of the new system as compared to the old method of admissions as well as their behavioural intention to adopt or not to adopt the system permanently.

#### *5.3.5.1: Perceived usefulness of the GDE online application system.*

According to Fred Davis, (1989) a person's behavioural intention to use a new system of doing things is determined by the benefits they believe the system has for their performance as well as how easy/difficult they think it is to perform a task. In trying to understand the applicants' perception of the new GDE online application as a useful system of application, the researcher asked them to indicate their view of the system in terms of whether it saves time and money. Analysis of their perceptions is displayed in the figure below.

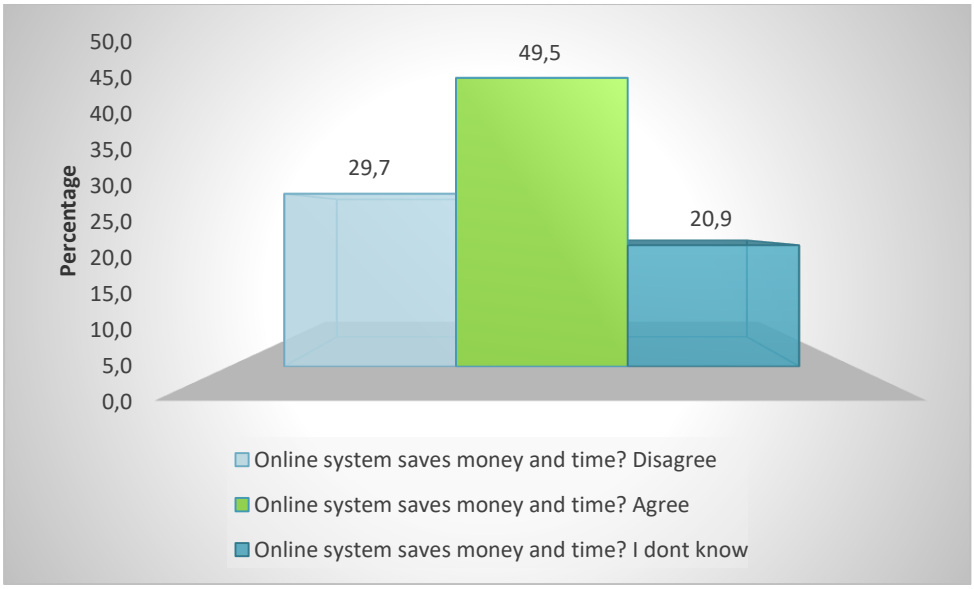


**Figure 5.28: Applicants' perception of the online system's cost effectiveness**

Results show 49.5% of the respondents agreeing with the idea that the GDE is money and time saving and that it has benefits for them as users of the system. 29.7% of the respondents tend to disagree with the idea, expressing the feeling that the system is costly in terms of time and money while 20.9% are not sure of whether the system saves money and time, which is evidence that they have not really understood the new system. On average though, almost half of the sample has managed to observe the benefits that the new online application method has for them, thus have a positive perception of the innovation despite the difficulties they might have faced in utilising it for the first time. Quite a number of people still have not created a positive perception of the new system's benefits though, probably due to challenges they might have encountered in submitting their applications online. There is need to find out ways of identifying reasons for their negative perceptions and changing them to positive in order for them to readily accept the new method of applications. Generally it can be observed that in the

Sedibeng West district there is still a 50-50-percentage rate of those who perceive the online application positively and negatively, hence more has to be done to instil appreciation of the new application method by the citizens.

#### *5.3.5.2 Perceived ease of use of the GDE online application method.*

Rogers, (1962) in his Diffusion of Innovation model argues that one of the factors that determines the adoption of an innovation by its potential adopters is in the complexity with which it comes, that is, how difficult or easy the innovation is to understand and use. The researcher therefore decided to assess the respondents' views on the complexity of the GDE online application method by rating their responses to the statement, "The online application system is easy to use". There were mixed reactions to that comment as shown in Figure 5.31 below. The biggest number of respondents disagree that the new system is easy to use. In total, 50.6% of the respondents disagreed with the statement thus showing that a common perception is that the new system is a difficult method for most of the applicants in the district under study. However, a considerable percentage of the respondents are of the view that the system is not so difficult. 16.5% strongly agree that the new method is easy while 24.2% generally agree that it is easy. Hence, generally 40.7% perceive the innovation as an easy method of application thus they do not see a problem using it.

There is great possibility that lack of adequate training / knowledge and exposure of the users to the new application system before the roll out of the application period contributed to the reason for its complexity to its potential users. The digital literacy levels of the district's citizens however, cannot be ignored as another factor determining the perceptions of the majority that the online application system is difficult. Ndou, (2004) also observed that the type of media

that can be available for effective adoption of e-government is sometimes hindered by the low literacy levels among citizens. Therefore, while infrastructure may be made available for citizens, it may not be very effective in improving the use of e-services in the absence of improved digital literacy of the intended e-government beneficiaries. Hence, more programmes should be put in place to enable the digitally illiterate to acquire some levels of literacy that will make them able to use and appreciate e-services.

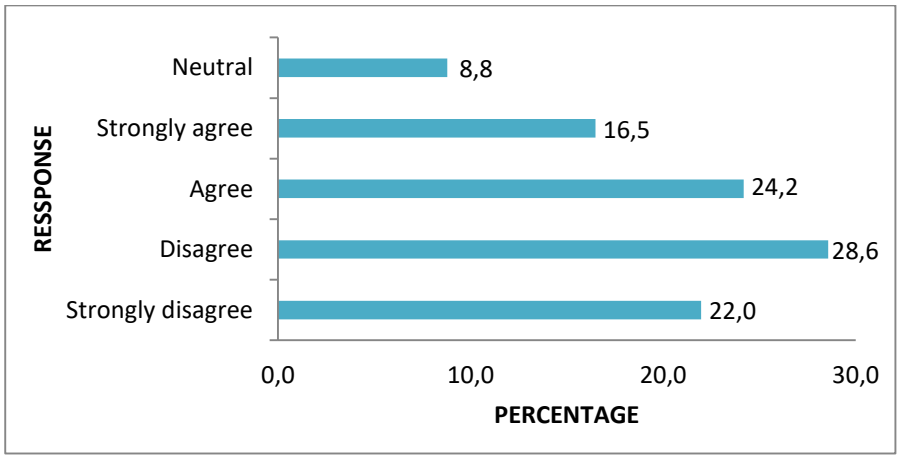


**Figure 5.29: Perceived ease of use (PEOU) of the system**

To further establish the complexity of the online application system, the researcher checked if it was easy for the respondents to log into the GDE online application system. 54.9 % of the respondents disagreed with the comment that logging onto the system is easy; to them it was a complicated task. 35.2% were however of the view that there is nothing complicated when it comes to logging on to the system. The percentage of those who agree that the system is easy to log on relates very well with the percentage of those who did their own applications using their own resource as shown in Table 5.5 above. This indicates that these people had the digital literacy required for them to

successfully go through the application process. The fact that more than half of the respondents rated the system as difficult to access points to the reason why there were high numbers of people who were assisted to submit applications (see Figure 5.18 above). The researcher observed that complexities with the logging in were related to user credential problems highlighted by the interview respondents, where most applicants failed to log onto the GDE system after forgetting their usernames and passwords which had been created at registration of details. Below is the analysis of the applicants' perceptions of the system complexity with regard to logging onto the system.

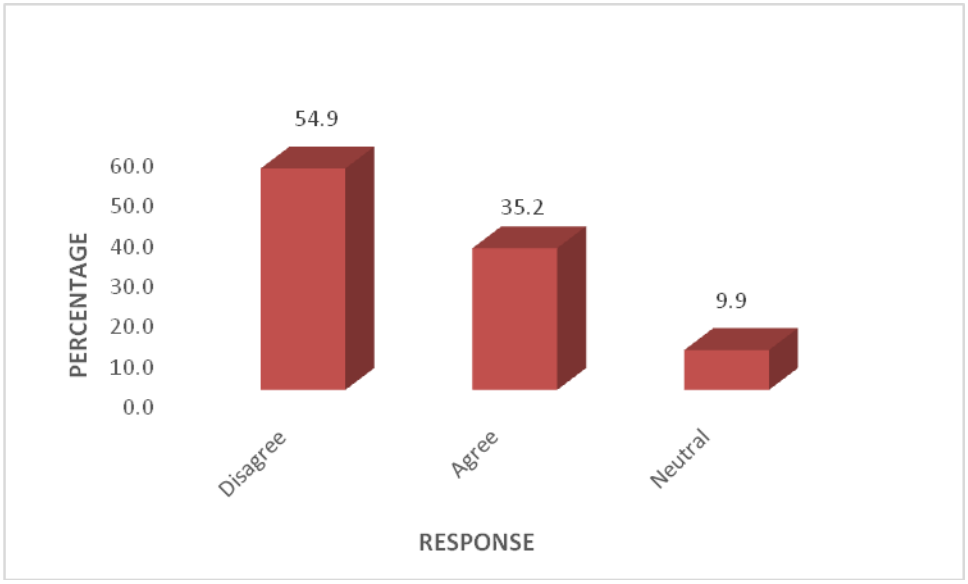


**Figure 5.30: Applicants' perception of the system's login complexity**

The perceptions that stakeholders have of the usefulness / added advantages of an innovation as well as its complexity to a greater extent influences how they rate it positively or negatively. Having found out the different views that the respondents had of the online application system's usefulness (PU) and their perception of its ease of use (PEOU), the researcher sought to establish the respondents' rating of the new system as compared to the old system of

applications. Asked to rate the new system between bad, good and excellent, respondents showed varied attitudes to the new online applications as shown in the analysis in Figure 5.31 below.

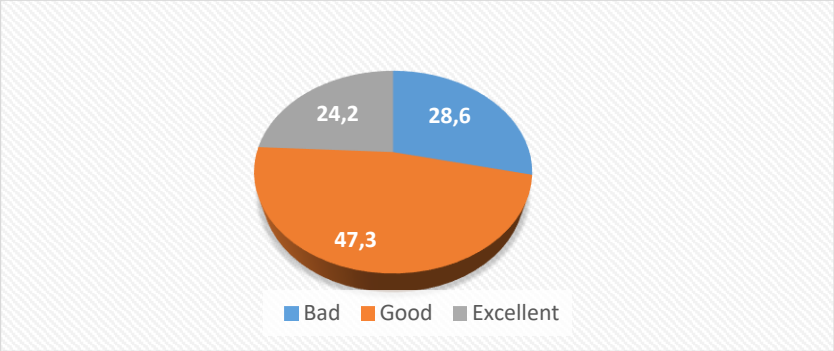


**Figure 5.31: Respondents' rating of the online application system**

24.2% highly rated the new system as an excellent way of learner admissions while 47.3% believe that it is generally a good method of submitting applications and enrolling learners. The cumulative percentage of those who rated it as good shows that on average, at least 72% of the population appreciates the new online application system as a good system of learner admissions in the Sedibeng West district. However, 28.6% of the respondents do not see the new system as good, they rated it as a bad system of applications, a sign that they may not be eager to readily accept it in future if no efforts are done to identify the reasons for their negativity and address them.

#### *5.3.5.3 Acceptance rate of the online application system*

A great momentum to move forward with higher quality, economical government services as well as better citizen-government relationships is presented through e-government recognition by governments and their citizenry. Jones and Hackney, (2007) purport that within the next few years, e-government through effective ICT use will have transformed the manner of public service delivery and

the fundamental relationships of government, citizens and businesses. Davis, (1989) however argues that PU and PEOU guide the behavioural intention of users to use the system while their BI leads to actual use (acceptance). These two factors are applicable to both citizens and government officials as users of the system. Officials should feel their productivity and efficiency improved by the technological innovation while citizens should feel that the innovation is responsive to their needs and bring better advantages than any system that it is replacing. This in turn guides their move towards either accepting or rejecting the initiative. Hence, it is important to note that not all e-government initiatives will be readily accepted by the intended users unless they perceive them to bring more benefits for them and if they feel they are less complex in nature.

In question 28 therefore, the researcher's focus was on assessing the extent to which the citizens in the Sedibeng West district are willing to adopt the GDE's innovation as an effective learner admission system in the district's public schools based on the perceptions that they have of the system. Asked whether in future they would choose the old system or new system of submitting applications if given a choice, respondents had mixed reactions to the questions as indicated in Figure 5.32 below.

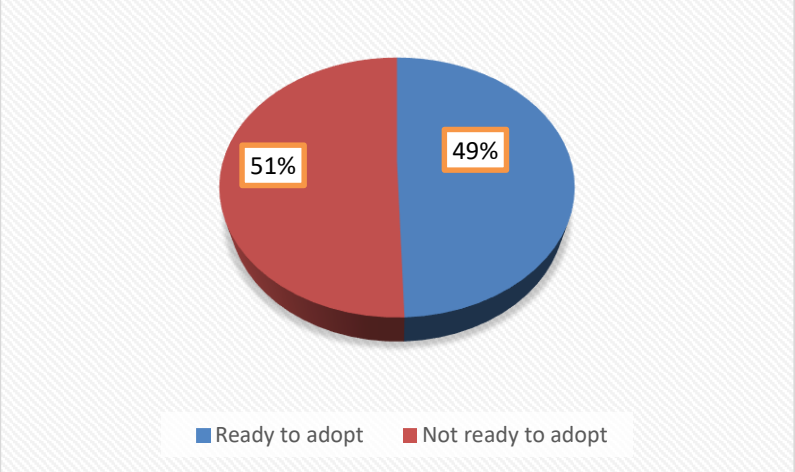


**Figure 5.32: Applicants' willingness to adopt the new online application system**

49.5% of the respondents indicated that they can still choose to use the online application method in future applications for school space for their children while 50.5% showed unwillingness to use the system again. The analysis shows a razor blade thickness in the difference between those who are willing to adopt the new system of applications and those not willing, only 1% difference. This shows that only half of the population of the district may willingly adopt the new system without being incentivized to do so, hence there is still need to create more awareness of the new system and its advantages as well as ensuring an enabling platform for e-services to be effectively adopted if it is to achieve full support of the citizens in the Sedibeng West district.

One of the Batho Pele Gateway Programme (BGP) deliverables in its efforts to modernise the public service to be more responsive to citizens' needs, is a portal that allows for content upload in all 11 official languages of South Africa with links to access different government departments. This is aimed at ensuring that government information and services are made available in easy and understandable languages for the diverse groups that make up the citizenry. However, the GDE online portal as a government service only presents

information and the application link in one language, English. The researcher thus sought to establish if applicants are comfortable with the use of one language on the portal or if they generally feel the need for the portal to allow interaction with the department in users' home languages. The applicants were asked if they agree that doing the applications in their home language would be more helpful and easier. Their different opinions are shown in Figure 5.33 below:

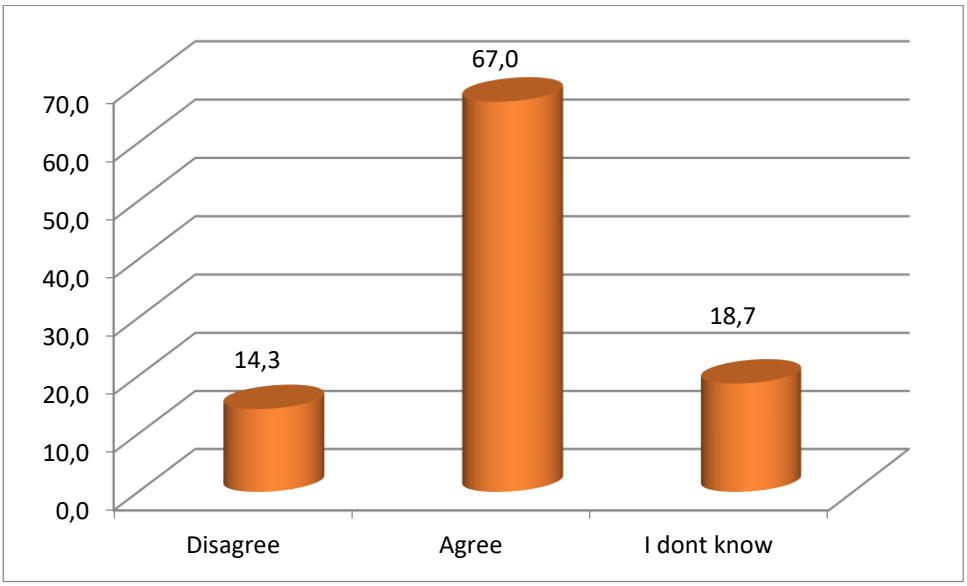


**Figure 5.33: Applicants' perceptions on using home language for applications**

The analysis reveals that the majority of applicants (67%) in the sample would have preferred that the applications information be provided in their home language. Only about 14% disagree with the use of home language as being more helpful while 18.7% chose not to express an opinion on the language of application. Since literacy levels of the district's citizens are not very high as indicated in Figure 5.6 above, that may be the reason why most of the respondents might find it difficult to understand the new application process, hence the need to accommodate most of them in languages they can best

understand. Use of different language to deliver services on the GDE web portal will go a long way in accommodating the users of different literacy levels and different language backgrounds.

#### *5.3.5.4 Challenges of the online application system to the applicants*

E-government adoption and implementation has not come as a walk in the park for most governments, South Africa included. It sometimes faces great hurdles that lead sometimes to failure of what initially were perceived to be advantageous projects. Gokmen, (2010: 31) asserts that there exists providers' side and user side challenges to e-government implementation. In this study, the researcher was concerned about finding out the challenges that affected users (school staff and applicants) during the implementation of the GDE online application system. Hence in an open ended question (question 29), the survey questionnaire respondents were asked to mention the problems / challenges they faced in using the online application method. Analysis of the problems mentioned by most respondents revealed a number of common challenges experienced by the respondents which are briefly explained below.

##### *i. Lack of sufficient knowledge of the application process*

Most of the respondents pointed out that they did not have sufficient knowledge and information regarding the online application system. This made it difficult for them to fully understand the process resulting in them failing to submit their applications in time. They also had problems when it came to logging onto the system since most of them had not been told about the need to remember log in details on the day of registration. This challenge was also echoed by the interview respondents. The researcher believes this to be a result of not having adequately trained the potential users of the system before full implementation of the new system. This strongly agrees with the Matavire *et al,* (2010) who argue

that one challenge of e-government implementation in South Africa is that citizen inclusion is generally undertaken only at the service delivery stage. Communicating the innovation to its potential users and how it will be carried out is of great importance during the planning stages of the initiative in order to have a well-informed group of users of the service and as it appears, this was not properly done before the full-scale implementation of the new online system. More public awareness and educational campaigns should be implemented to raise awareness of new initiatives and promote the utilization of e-services by the general citizenry.

***ii. Lack of resources***

E-government implementation in South Africa is believed to be a testing process considering that most people a challenged by the existence of inadequate infrastructure, lack of resources and unequal access to technology (Naidoo, 2007; Farelo & Moris, 2006). Almost nine years after the findings above were made, respondents in this study still brought about the problem of lack of resources to enable them to do the online applications on their own. Most mentioned that they neither have computer technology nor internet access which also affected their ability to apply in time as they had to travel to application centres to receive help. These challenges were also identified by Gokmen, (2010:31) who asserts that the problem of disparity in access to e-government services, exacerbated by the digital divide among populations of different societal strata is a big impediment to e-government development. For successful transformation of services from manual to electronic ones in the Sedibeng West district, it is thus imperative that the problem of inequalities in access to relevant technology be treated as a matter that deserves urgent attention.

### *iii. Costly data bundles from network providers*

The cost of internet is a major drawback to the use of internet services by citizens in most developing countries (Anni, 2016; Ndou, 2004, Dada, 2006). The above observations also surfaced in the challenges to the implementation of the online application system in the Sedibeng West District. Those who had mobile devices to use for the application raised a concern over the cost of mobile data which they said they could not afford. Although they are internet versatile, these respondents saw the cost of internet as a great challenge that affected them as sometimes data bundles got used up before they could complete the application process. This challenge was also observed in (mybroadband, 2015[30]) in the comment that when it comes to broadband pricing relative to developed countries, South Africa internet access ranks among the most expensive in the world. The challenge is also reflected in the 'Data Must Fall' campaign in which South African citizens expressed their dissatisfaction with costs of mobile broadband data in November 2016. When it came to use of internet cafes for the applications, applicants still complained that costs were also very high for them, especially considering the system complications that saw them having to start processes all over again after disruptions. This means that most citizens of the district cannot afford the high cost of both broadband and mobile internet to be able to use it effectively to engage in e-services. This challenge rises from the problem of inadequate ICT infrastructure development common in most African states (Ndou, 2004), which the South African government should pay immediate attention to if its e-government vision and strategy is to be realised.

[30] See www.mybroadband.co.za>news>119516_south_africans_are_getting_nailed_over_broadband_prices.html

The GCR E-government Strategy, (2015-2020) in its e-government first pillar[31] places emphasis on the need to ensure an enabling ICT infrastructure through provision of a network that is available for government entities, business and citizens in the Gauteng province so that they can access e-services. Sufficient technological infrastructure should be built to enhance quality e-government transformations in the public sector. However, almost one and half years down the line after establishment of the GCR e-government strategy, the strategic objective of the first pillar has not been fully realised in the Sedibeng West district, especially with regards to rolling out of broadband network for the benefit of the citizens. The researcher feels the initiation of the last mile access (Wi-Fi, Mesh, ASDL and 3G) projects needs to be accelerated in order to build an enabling ICT infrastructure for the district. If more free Wi-Fi hotspots can be made available to the citizens this could go a long way to ease the problem of internet costs and improve people's appreciation of e-services.

***iv. System crash while they were busy with applications.***

Most of the respondents mentioned the problem of the system crash that affected the application process in the first few days of the online applications roll-out. Some complained that this affected their applications in terms of the internet data they had to reload to start the process each time the crash happened. Others complained that they had to stay up part of the night to wait till the system could respond. However, this was a short-lived problem as the GDE quickly took action to fix the problem.

[31] Refer to table 3.1 above for the GCR E-government Pillars

## 5.4 CHAPTER SUMMARY

Many e-readiness factors influence the implementation of the newly introduced GDE online application system in the Sedibeng West District. Factors that affect the e-readiness of schools and citizens of the district include accessibility of ICT infrastructure and internet. Findings of the research show that infrastructure supportive of implementation of e-services in the form of internet access is available in the district schools, though not very adequate. Schools are having semi-skilled to skilled workforce that is capable of delivering services on the new online application system. The citizen's e-readiness has been found to be affected by factors like low literacy levels in the district, lack of digital knowledge, inequalities in access to resources and the internet.

Though e-government through the implementation of the new online system has been seen to bring benefits for both government officials and citizens, it has been averagely accepted by the users especially the citizens. More still needs to be done to improve people's acceptance of the new system and enjoy e-services from the Gauteng Department of Education.

The next chapter presents a summary of the whole study, draws conclusions and provides recommendations that may help in the improvement of the online application processes and other e-government implementation projects in the department.

# CHAPTER 6: SUMMARY, CONCLUSION AND RECOMMENDATIONS

## 6.1 INTRODUCTION

State governments, globally, are becoming more aware of the value of e-government innovation in improving service delivery and ultimately achieving good governance. E-government greatly impacts on how the public sector conducts its business, interacts within itself, with private sector businesses and with citizens in general as the government's clients (Van Dijk and Croucamp, 2007:60). Therefore, enhancing public sector performance is now the key goal of most governments with focus being on delivering services in new, better, and often cheaper ways.

The main objective if this study was to assess the effectiveness of e-government as a tool for service delivery improvement. A case study of the efficiency and effectiveness of the new GDE online school application and admission system was used for this purpose, with specific attention paid to its implementation in the Sedibeng West District of the Gauteng province. Focus was on checking the e-readiness of the district schools and citizens for e-services, assessing the citizens' willingness to use the new e-service as well as identifying opportunities and challenges faced in implementing the new learner admission system in the district.

The understanding of efficiency and effectiveness of e-government in the improvement of service delivery by governments and their agencies was presented theoretically through the review of literature related to e-government and service delivery, before an empirical study was conducted in the selected district.

This chapter summarises the findings of the study, draws conclusions based on the research problem and hypotheses and make recommendations based on the study outcome.

## 6.2 SUMMARY STUDY

The summary of the study will be drawn according with the outline of the study as indicated below:

### 6.2.1 RESEARCH PROBLEM

The aim of the study was to establish how efficient and effective new online learner application and admission system is in ensuring more effective admission processes in the public schools and how ready citizens (customers) and other stakeholders are to permanently accept it as an effective admission practice. A case study of the implementation of the new GDE online application system in the Sedibeng West District was used to conduct this study.

### 6.2.2 RESEARCH HYPOTHESES

Two hypotheses were mentioned for this study, one alternative and one null. The alternative hypothesis stated that the GDE online application is effective and efficient in improving admission processes in public schools. The null hypothesis suggested that there are no challenges that can hamper the successful implementation of the online application system in the Sedibeng West District.

The above hypotheses would be validated or invalidated through the empirical study carried out in the case study of the implementation of the newly introduced GDE online application system in the Sedibeng West district of the Gauteng province.

### 6.2.3 FINDINGS FROM LITERATURE

The terms digital government and e-government are closely related and they are often used interchangeably, which creates confusion digital government refers to the use of different ICTs in the public sector, that is, all electronic and non-traditional means of passing government information to the citizens. E-government is one aspect of digital government which involves the provision of government information and services electronically, mainly over the internet. Though many researchers and academics have provided various definitions of the e-government concept, a common perception of e–government is that it uses ICTs and the internet to improve activities of public sector organisations; hence it is a tool for public service delivery. The e-government concept thus incorporates four key dimensions namely e-management, e-services, e-democracy and e-commerce and these dimensions work towards the improvement of service delivery in the public sector, thus making e-government an effective and efficient service improvement mechanism that can be effectively applied in public sector organisations.

Globally, governments have taken a major paradigm shift to promotion of e-services in a bid to offer more effective, efficient and responsive government services to the citizens. ICTs have thus brought about revolutionary changes to the global society, pushing for the development of ways to digitalise routines and practices of governments. A great drive to advance with higher quality, cost-saving government services as well as better government-citizen relationships is therefore presented through the adoption of e-government. The growing importance of e-government is seen by both academics and e-government

researchers as stemming from its capability to promote better governance and to raise service performance in the public service delivery process.

A number of models have been developed to explain the various stages of e-government development that governments go through when taking the e-government pathway to service delivery. The models are used to guide, categorise and evaluate progress in emerging e-government projects and they provide government agencies with insight into possible services to offer to the citizens at different e-government implementation stages. Four common models used by countries in their development of e-government programmes are the ANAO, SAFAD, Layne & Lee and the Hiller & Bellanger stage models of e-government.[32]. All four developers of the models concur that e-government development in organisations moves through at least four stages till it reaches maturity level, which is often the creation of a one-stop gateway / portal to all public services. Common to the models is the fact that e-government implementation starts from creation of an online presence and provision of simple services and static government information about services. The ANAO and SAFAD models are seen to be very much similar in their four stage divisions that are almost similar except for the last stage where SAFAD focuses on achievement of networking government agencies while the ANAO limits this stage to sharing of information only among government departments. However unlike the ANAO, SAFAD and Layne & Lee models, the Hiller and Belanger adds a fifth stage to the e-government development stages namely the political participation stage with its emphasis on e-democracy. All the four models are

[32] See Persson, A & Goldkuhl, G. 2005. Stage models for public e-services _ Investigating conceptual foundations. www.vits.org/publikationer/dokument/492.pdf

often adapted to suit the contexts of the governments in which e-government is being implemented.

Below are other findings coming from literature, based on the objectives of this study regarding e-government as a service delivery strategy in the public sector:

**i) E-readiness factors that influence e-government implementation**

Literature reveals that the starting point for governments to effectively adopt e-government for service delivery lies in the degree of its e-readiness, that is, the quality of its ICT infrastructure as well as the customers', businesses' and government agencies' preparedness and willingness to utilise information communication technology to their advantage (Dada, 2006:1; EIU, 2009:4). Hence, organisations are expected to conduct an e-readiness check with the aim to address those factors that may become obstacles to implementation of projects before they are rolled out. Thus, the World Bank, (2002) emphasises the point that governments need to be e-ready in terms of relevant ICT infrastructure that is both accessible and affordable for the citizens to appreciate the value of e-services. To make both government and its stakeholders ready for full adoption of e-government services, the following have been identified as key areas that need to be paid attention to:

- Creation of an enabling ICT infrastructure that enables connection between governments and stakeholders at all times.
- Establishment of governance structures that manage e-government policies, standards, regulations and monitor implementation of programmes in every public sector department. Examples of such include the SITA and GITOC among other structures in South Africa.

- Promotion of enabling platforms for and support services that enhance development and delivery of e-services by government entities, adequate capacity building among government officials and citizens.
- Inclusion of a well defined regulatory and legislative framework that provides a clear strategic e-government direction as well as promotion of secure access to e-services (Matavire *et al*, 2010; Quina, 2011).

The Pacific Council on International Policy in the Roadmap for E-government in developing countries further clarifies the need for public sector innovators to understand their readiness for e-government by outlining ten questions that should be considered by government officials planning e-government projects for their departments before they embark on any implementation. The Roadmap Working Group believes that answering the ten questions is crucial to the successful conception, planning, managing and measuring e-government implementation. They are thus, indicators that should guide e-government implementation the public sector and all e-government initiatives should measure up to the Roadmap indicators. Hence, e-readiness is not only about ICT infrastructure development and accessibility of the technology to citizens, but also involves a clear e-government vision and mission that should inform the different projects that can be implemented for the upliftment of the service delivery of a government entity.

### ii) Factors affecting e-service user perceptions and adoption of e-government

Various factors have an influence on the perceptions that users have of a particular system and their adoption thereof. According to the Technology Acceptance Model (TAM) by Fred Davis, (1989) there is a basic assumption that

two factors namely the perceived usefulness (PU) and perceived ease of use (PEOU) of any new innovation determine if users of the innovation will accept and use a technology again once it has been presented to them. The PU and PEOU factors are believed to be controlled / influenced by variables like users' training levels as well as the system design of the new innovation, and they are applicable to both citizens and government officials as users of the system. Davis, (1989) argues that the adoption and sustainability of an e-government initiative depends on how much the users see it as user-friendly and having more benefits for them as compared to whatever system it is replacing. Hence it is advised that new initiatives be ones that bring a positive change for the expected users.

Rogers, (1962) in his Diffusion of Innovation (DOI) theory further explains how, why and at what rate new ideas and technology spread through a social system over time through the process of diffusion. He assumes that the sustainability of an innovation is subject to the nature of its adopters and how they perceive the innovation. Thus, adopters are categorised in relation to how they adopt innovations in categories namely innovators, early majority, late majority and laggards. This means that it's not possible to expect people to see the value of any innovation with the same eye and accept it willingly. While some may quickly see the benefits of a new initiative, others may take time before they develop a positive perception and appreciation of the same initiative. User perception and adoption of an innovation is motivated by the relative advantage, complexity, testability, observability and compatibility of the innovation with the needs and values of the users. Therefore, any organisation seeking to start e-government

innovations need to consider the factors in order to ensure its early and full adoption by its potential users.

The theoretical frameworks above, namely the Roadmap for E-government in the Developing World, the Technology Acceptance Model (TAM) and the Diffusion of Innovation (DOI) theory have been used widely in the evaluation of emerging e-services in both developed and developing countries.

In this study, the DOI and the TAM were mostly used to assess the effectiveness and efficiency of the GDE online application system as an e-government initiative for the improvement of service delivery in the department. Of importance, the concepts namely perceived usefulness, perceived ease of use, and user adoption factors were checked in the implementation of the online applications. These shall be explained more in the empirical summary of the study.

**iii) Lessons derived from best international practice.**

The Thimpu Thromde Education System Service of Malaysia and the Japan's National e-tax initiatives are two examples of successfully implemented e-government projects in the global context. Valuable parallels and lessons can be derived from these two projects for the improvement of e-government projects in South Africa especially, in the Gauteng Department of Education. Both projects bear testimony to the fact that e-government can effectively and efficiently improve public sector performance and that it can result in great transformational impact on service delivery. In both cases, the government processes were reengineered in a way that improved the efficiency of the government officials. While the e-tax initiative improved the number of tax return filed and processed for the whole country;, reduced turnaround time for processing of returns while

reducing physical queuing for services at tax offices, the Thimpu Thromde education e-service of Malaysia improved the admission processes of the Thimpu City schools and enabled online distant management of the schools by the head office. A further advantage is that it has enabled hassle free, smooth student management processes and it has also made it easy for parents to apply for their children's learning space from any place and at any time, making it a more convenient service delivery mechanism for both the education office and the parents. The Thimpu Education Office management argues that the portal has greatly reduced the application processing time, enabled easy assignment and fair distribution of learners to various schools as well as easy and more improved management of student data. Students are assured of having been placed in schools before the beginning of the academic year, something which also promotes effective strategic planning by the Thimpu Education office and the Thimpu City schools in particular. This to a greater extent can be a good model for the online applications initiative under this study. The Thimpu Thromde e-service has managed to integrate a variety of education services under one portal ranging from online submission of applications, online administration of schools, link for university applications as well as an employment application submission link among other services. Such integration is important in building a one stop gateway to educational services, something the GDE in our case can also adapt to the local context. There is evidence from the two global e-government implementations mentioned above, that if well planned and implemented, e-government has a great potential to improve service delivery in public sector institutions.

### iv) The South African E-Government Pathway

The South African government is not lagging behind in the transformation of its services to the citizens through e-government implementation. The e-government goals of the country are reflected in the Batho Pele Principles for public service delivery, the South African government's service delivery philosophy. The e-government goals for the country are:

i. To improve internal organizational processes of government.
ii. To provide better information and service delivery
iii. To increase government transparency in order to reduce corruption
iv. To reinforce political credibility and accountability
v. To promote democratic practices through public participation and consultation.

Statutory bodies namely SITA, GITOC and PSICTM[33] (refer to abbreviation list) have been established to manage the e-government pathway under the guidance of the Department of Public Service and Administration (DPSA). Various legislative and regulatory frameworks have been put in place to guide the government departments towards achieving the e-government vision of the country.

A number of e-government initiatives have been carried out by some government agencies and the central government, some successful while some succumbed to failure. Among the current projects, the SARS e-filing system is proving to be a success and of late the Gauteng Department of Education has since introduced the online application service which is the focus of this study. Both initiatives

[33] Refer to the list of abbreviations

mentioned above do have some parallels with the Japan's National E-tax and the Thimpu Thromde Education Service System of Malaysia respectively.

### v) E-government implementation constraints and challenges

E-government has been observed by various scholars and researchers as not always a walk in the park for many developed as well as developing countries. Various obstacles sometimes hinder the successful implementation of what was once perceived as good projects. Common challenges for e-government in the African context identified in both global and local literature include:

- Lack of qualified / skilled human resources
- Insufficient legislative framework s for effective e-government planning
- The curse of the digital divide among citizens
- Low literacy levels which hinder the type of technology available e-government's effective adoption o happen
- Lack of involvement of stakeholders / potential users in the planning process
- Poorly to non-piloted projects
- Wholesale adoption of projects from developed countries without consideration of local contexts in which they are to be implemented.

According to Bhatia, (2005) a country's e-government strategy should therefore be measured and adjusted to the country's situation in terms of:

- PC & Internet penetration, (adequate technological infrastructure)
- software development capabilities available locally,
- literacy levels (both conventional & IT),
- economic level (ability to pay),

- Legal framework
- languages prevalent, etc.
- the degree of administrative, technical and political leadership's preparedness and commitment.

These and other numerous challenges need to be carefully addressed by those planning e-government innovations if the initiatives are to be successful. The next section summarises the empirical findings of the study.

### 6.2.4 EMPIRICAL SUMMARY

The empirical study made use of both qualitative and quantitative data. First interviews were held with school principals, school administration staff and GDE officials at the Sedibeng West District Education office. The purpose was to check the efficiency and effectiveness of the recently introduced GDE online application system in the improvement of learner admission processes in the district's public schools. Later on a survey questionnaire was distributed to applicants in the catchment areas of the district to check their perception of the new system as well as their willingness to accept it as an effective admission system. Findings from the empirical study are thematically summarised below following in line with the study objectives.

#### i. LEVEL OF E-GOVERNMENT DEVELOPMENT IN THE GDE

The GDE online application system is an emerging e-government service in the Gauteng Department of Education falling on the third stage of the ANAO stage model for e-government development, that is, on the transaction of secure information stage. E-government in the department has gone beyond simple sharing of static government information over the web to promotion of advanced interactive relationship between citizens and the government service provider

which enables provision of transaction related services. The online application link on the GDE web portal allows for secured interaction between the applicants (citizens) and the Agency (GDE) through the use of usernames and passwords for identification of individuals interacting with the service provider.

In line with the ANAO model, e-government in the GDE has developed to a stage where the online application portal provides for data restriction and protection of individual information from being accessed by anyone other than the user and the agency. However, at the moment the system allows only transaction of personal information by individual to the government agency in order to elicit government educational services. Online financial transactions between the citizens and the GDE are not yet enabled on the web portal.

### ii. E-GOVERNMENT SERVICE DELIVERY TYPOLOGIES OF THE GDE

The role of e-government technology entails three main forms of interaction with three main distinguishable target groups namely citizens (G2C), businesses (G2B) and other government agencies (G2G) (Farello & Moris, 2006; Haque & Panthrannarakul, 2013; Anni, 2016). E-government services therefore differ based on the type of relationships facilitated by the use if ICTs by a specific government agency.

The GDE through its web portal and online application link handles G2C and G2G interaction scenarios as its e-government services typologies. G2C interaction is evident in the interaction between the GDE and the people applying online for learning space in the public schools. The GDE officials and the citizens take interchanging roles of sender and receiver in the communication structure created by the online application system. Citizens become senders of information

to government when they upload their personal information to the GDE web portal in order to receive services. The GDE accesses the information in order to process applications and they become senders when they provide feedback to applicants on the status of their applications. Instructions are also provided to applicants on the portal on how to apply online for their children's space in public schools.

The G2C service has helped in reducing the number of citizens queuing physically at the district education office and schools for direct services from government employees, thus showing signs of achievement of the major goal of the initiative. It has also improved the response rate of the government agency to the citizens' applications and queries. Hence, it has come as a cost – effective strategy for service delivery which benefits both the government agency and the citizens.

G2G interaction is also made possible on the online application link. The system has an interface that allows direct online interaction between the schools, district education office and the GDE head office. The new online application system has managed to create networked information sharing organisations that link both the frontline and back-office staff of the organisations. Front office operations of schools in receiving applications are directly linked to the back office operations thereby enabling immediate creation of waiting lists and processing of applicant data. Information about applicants is shared within the agency and the head office directly monitors online, the enrolment activities of schools and district education offices. As a result the online application system has created opportunities for e-administration in the provincial department and improved the

efficiency of the government officials in their enrolment of learners through the improved G2G interactions.

### iii. STATE OF E-READINESS IN THE SEDIBENG WEST DISTRICT

One of the objectives of the empirical study was to establish the e-readiness of the district's schools and citizens to make use of e-services offered by the GDE. Evidence from both qualitative and quantitative data revealed a number of factors that influence the e-readiness in the district. Infrastructure supportive of implementation of e-services in the district schools is available, though not adequate enough. Most of the schools have infrastructure in form of few computers and laptops that enable them to store their learners' data electronically and some form of internet connection which enables them to work online. The most common internet connection in the schools is prepaid mobile internet accessed by use of a USB modem and prepaid data purchased from various mobile network providers which usually connects one laptop at a time to the internet, meaning the rest of the other computers and laptops will be internet inactive. However this type of connection does not allow fast uploading and downloading of information since it is sometimes affected by network problem. Other internet sources in the district schools are via the use of mobile Wi-Fi and Iburst. Hence, there is capability in the district schools to embrace the use of e-government initiatives especially the GDE online application system. However, the limited availability of internet often leaves only one person working online leaving most of the other staff still working on manual processes in their duties.

When it comes to the citizens' e-readiness, various factors influence their readiness to engage in online services with the government departments. The digital divide has been found to be having strong grips on the citizens of the

Sedibeng West district. This manifests itself in the lack of access to ICT resources by many people in the district as well as very low to no digital literacy levels among most of the citizens. Digital literacy is a pre-requisite for electronic interactions to happen with service providers and its absence to a greater extent affects the potential for increased use of e-services. Furthermore, the internet access problem causes most of the citizens to be excluded from digital services as most citizens lack proper internet access to enable them to receive information and services over the internet. Most of the alternative sources of internet require the citizens to fork out money in order for them to enjoy the internet. The study revealed that there are more internet cafes which are paid for than free Wi-Fi hotspots in most of the Sedibeng West catchment areas. A large section of the population living in townships and informal settlements do not have access to both internet cafes and Wi-Fi putting which makes them more disadvantaged when it comes to utilizing online services. While mobile technology has the potential to enable many to have internet access these days, high costs of data are greatly preventing many people from taking advantage of mobile internet. Interventions are needed by different stakeholders to make internet access improved and in turn make the utilization of e-services a reality in the district.

Despite these challenges however, it is evident that the GDE was proactive in ensuring that no one is affected by digital exclusion. This was done through establishment of a number of online application centres where those without adequate resources would have access to free resources and submit their applications online too.

The availability of semi-skilled and skilled personnel to maintain and manage the use of ICT in the dissemination of government information and services to the citizens also determines the e-readiness of the district to adopt the use of e-government services. In the Sedibeng West District schools there is evidence of manpower with skills and digital literacy levels that can help schools to shift from manual to electronic service delivery through the use of the new online application and admission system. However, their skills can still be further enhanced through more training on the new system so that they can effectively use ICT to improve their performance in the various jobs, especially in handling enrolment processes of the schools. Furthermore, it was observed that not many schools operate with the help of IT staff except for a few interns who come and go leaving the schools starved of technicians when they need certain IT services that enable them to remain digitally active.

### iv. Perceived Usefulness of the new application system

The perceived usefulness (PU) and perceived ease of use (PEOU) of any innovation by its potential users determine to a greater extent their acceptance and adoption of the innovation Davis, (1989). The online application system has been observed to bring some advantages for the both the citizens and public schools in the Sedibeng West district. For citizens it was observed by the majority (49.5%) as cost-effective in terms of time and money as compared to the old system of applications. 80% of the respondents believe that the system reduces physical queuing for services at government schools during the application periods as people can now apply from any place and at their most convenient time. Improvements were also observed in the performance of school administration staff through the use of the online application system. Such

improvements were evident in the speedy processing of applications, easy management of learner application data, direct interactivity between schools, district education office and the head office which made problems to be quickly solved. 100% of the school administration and management staff agreed that the system reduced the paperwork usually associated with their work and are happy to see the shift to paperless offices via the use of electronic government.

The system has been hailed by both applicants and school management staff for its promotion of fair distribution of learners to the district's schools, with most learners being placed within schools that are in the minimum distances from their residential areas. Learners were assured of having been placed in schools before the beginning of the academic year since by end of November more than 80% of applicants had already received offers of space in the district's schools, something which also promotes effective strategic planning for the school management These highlighted advantages identified by both parents government officials in the schools show that the online application system is positively perceived by many users in the district under study.

### v. Perceived ease of use and its influence on users' willingness to adopt the new system

The complexity of an innovation determines the extent to which users will be ready to willingly accept it. Non-complex innovations are more widely accepted than complex ones (Davis, 1989; Rogers, 1962)

Regardless of its observed relative advantage, not many people in the Sedibeng West district perceive the new online application system as easy to use. 50.6% of the population saw the new system as complicated for them despite the benefits that it brings, while 40.7 are of the view that it is an easy system to use. The

digital and general literacy levels of the district's citizens, coupled with inadequate training and information of potential users on the new online application method may have made the system to be difficult for many. This to a large extent has influenced the willingness of users in the district to readily accept the new application system as the permanent method of application in the future. The acceptance rate of the new system is almost 50-50. While almost half the population (49.5%) may use the system of application again, 50.5% expresses unwillingness to use the system, given an option to choose. Therefore, generally more needs to be done to increase awareness of the new system and promote its widespread acceptance by the potential users.

### vi. E-government implementation challenges in the Sedibeng West district.

Regardless of its numerous benefits and synergies to governments and societies, e-government usually faces many challenges and obstacles, especially in developing countries (Anni, 2016; Ndou, 2004, Mphidi, 2009; Elsheikh *et al*, 2008).Though the new online application system has benefits to the citizens and government officials, a number of challenges is seen to affect its effectiveness in the Sedibeng West District. The challenges include the digital divide which is still very high in the district. Most members of the population have low digital literacy levels which affect their ability to take advantage of the use of ICTs to access services online. The divide is worsened by the unequal access to ICT facilities and internet access among the district's citizens. Inadequate information to the users of the system, minimal to lack of training in the use of the new system, applicant apathy especially among parents of Grade R learners in the district's primary schools and applicant non-compliance of applicants to the GDE learner

admission requirements also contributed to challenges that affected the implementation of the new system. Furthermore, user inconsistency in the use of the contact details they submitted online affected the delivery of feedback messages to some applicants which made them not to know if their children were placed or not. It was also noticed that some learners were wrongly placed in schools that did not match the placement criteria of residential address and home language. The problem of duplicated enrolments also surfaced, shown in the 23 respondents who received offers of space in 2 schools and 10 who were offered space in 3 schools. Therefore around 43% of the sample had duplicate enrolments which tends to contradict with the assertion made by e-government researchers (Chatfield, 2009; World Bank, 2002, Naz 2009; Farello & Moris, 2006) that e-government implementation has the power to eradicate duplication of services and information. This paints a picture that there is a possibility that many people in the district in the district had duplicate enrolments which leaves the online application system ineffective in reducing multiple enrolments per learner. Generally these challenges need to be considered and addressed for the improvement of the efficiency and effectiveness of the new application method to be achieved.

## 6.3 CONCLUSION AND VALIDATION OF HYPOTHESES

At the beginning of this study, two hypotheses were set which stated that;

i. The GDE online learner applications system is effective and efficient in improving admission processes in public schools.

ii. There are no challenges in the implementation of the online application system in the Sedibeng West District.

The study found out that a lot of improvements were observed in the enrolment processes of public schools in the Sedibeng West district after the introduction of the online application system. From all the schools in the study sample there were no reports of long queues of applicants during the application period as was the norm in the past when applications had to be physically submitted at schools on specifically indicated dates. In the past parents would wake up as early as 3 am to secure spaces on the queues in order to receive direst services from school personnel. However with the introduction of the new application system, it has become possible for a person to submit applications to a number of schools at the same time without having to go to the schools. The new system is more convenient for applicants in the sense that they can apply at any time and place since the online application portal is open for applications at any time of the day. Hence there is no more need to take off days in order to go to schools to apply.

Traditional enrolment processes were characterised by the use of manually completed application forms that required lots of school personnel's' time to process. This paperwork has been reduced with electronically completed forms which are made easily accessible to school administrators for processing. This in turn has greatly reduced the turnaround time for the processing of applications and providing feedback to the applicant which usually took nothing less than 2-3 months in the past. This study found out that the majority of applicants (80%) had already been placed in schools by 30 September.

The system managed to fairly distribute learners to most schools within the district. By end of September 2016 both township and urban schools had enrolled

learners unlike in the past where many schools would still be under-enrolled at the beginning of the fear, especially in townships and rural areas.

The placement criteria used under the online application system proved to satisfy most applicants. 83.5% percent of those who had been offered space confirmed having received offers in schools of their first choice. Thus the online application criteria is seen to have reduced the bottlenecks created by different school enrolment criteria in the past which to a greater extent often segregated some learners on grounds of academic performance. Furthermore, the system managed to place most of the learners in schools within short distances from their homes, thus being cost-effective for the parents. In general, the system was rated by many as good despite the challenges faced by others in using the system. Therefore, it can be concluded that the new system of applications is efficient and effective in improving admission processes, making the first hypothesis valid.

However, the number of challenges identified by applicants and administrative staff in the school as explained above invalidates the hypothesis that no challenges exist in implementation of the system in the Sedibeng West district. We therefore conclude that although the online application and admission system may be effective, the identified challenges need to be effectively addressed in order for e-government to yield higher benefits for service delivery in the district's schools and education offices.

## 6.4 RECOMMENDATIONS

This section attempts to propose some recommendations that may further help to improve the efficiency and effectiveness of the online application system and

other future initiatives that may be introduced as e-government strategies for service delivery in the Department of Education.

### 6.4.1 The importance of public participation in e-government planning and implementation

For the concept of the 'people first' to hold water and become a reality, the government should consider treating citizens as important customers (Burkey,2002). According to Gwala (2011:55) through genuine and empowering public participation, the public is given opportunities to participate in the development and administration of its local structures thus becoming change agents who manage and sustain development in their area, in line with the concept of a better life for all. Allowing the citizens to have this capacity in their own development makes planning, implementing, monitoring and evaluation of e-government projects a shared responsibility that leads to achievement of good governance. Parents would not complain to the GDE about the introduction of the new online system and feel as if they are made vulnerable if they were kept in the light of new upcoming developments that affect them and if they had been given a real opportunity to participate in the planning stage of the electronic application method. Involvement of users in the planning of the initiatives promotes their understanding of its purpose and secures stakeholders' buy-in of the implementation and adoption of the initiative. Thus, in future the GDE needs to consider wider pilot testing and involving wider sections of the citizens during the planning of any initiative that may involve them in order to promote their understanding and non-incentivised adoption of the initiative.

### 6.4.2 Extensive stakeholder training

The confidence of users in a new innovation stems from their ability to effectively use it (Rogers, 1962; Davis, 1989). The more an initiative seems complex to its

users, the less likely they are to readily accept it. Therefore, it is important that extensive training be offered to users of any new system, both government officials and the citizens before it is fully implemented. In the case of the online applications it looks like there was inadequate training of the administration staff in schools and no form of training was offered to the parent community with regard to the process of application, hence the reason for the outbursts of anger by some parents when the new system was rolled out in April 2016[34]. Emphasis should be on effective training and capacity building for e-government success (Word Bank, 2002).

### 6.4.3 Cultivation of digital literacy culture

People now live in a global village where almost everything is technologically driven. Hence digital literacy has become a requirement for one to fit well in the global society and its eminent change (UNESCO, 2005; United Nations, 2002). Computer literacy should be the first step towards achieving networked societies that benefit from the use of e-services. Therefore, the GDE should promote cultivation of digital literacy in our societies by making computer studies a compulsory subject for all learners from as early as primary school in order to improve the literacy levels of the citizens and promote e-readiness at an early stage of life. Furthermore, free weekend or evening classes may be offered to willing computer illiterate citizens in the schools that have sufficient computers in order to improve the digital literacy in the district.

### 6.4.4 Addressing the digital divide problem

E-government may never yield full benefits for society as long as the digital divide is still highly evident among the citizens. The rural-urban divide in developing

[34] See Ndlazi, S. 2016. *Parents Lash School Online Admissions.* Johannesburg. IOL. Available at: www.iol.co.za/lifestyle/family/parenting .

countries needs to be addressed to promote equal access to government services (World Bank, 2002). The study found out that, townships, informal settlements and rural areas are more disadvantaged when it comes to accessing the internet. The provision of more free Wi-Fi hotspots by government in partnership with the private sector can go a long way in easing the internet access problem and encouraging the society to appreciate a move to e-services. The internet is no longer a want but a need / must-have, thus it has become a utility just like water and electricity.

The digital divide has also been seen to affect schools in the district. Different model schools experience unequal access to the internet, with former model schools mostly having better internet connections than their counterparts in the townships and rural areas. There is need to invest more in equipping all schools with better internet connections that should enable a proper shift from manual to electronic processes in the schools. This does not have to be a duty of government alone to provide for the improvements in both schools and the communities. While implementation of the GCR broadband network needs to be accelerated in the Sedibeng West district, a call should be made for the intervention of and cost-sharing with the business fraternity where feasible through establishment of more partnerships with the private sector and civil society at large. With the recent increase in fiber internet to the home or premises (FTTH), in South Africa, chances are high of improving the internet connections in the public schools at less costs as long as enough resources and sponsorship have been sought for the purpose.

### 6.4.5 Increased promotion of Information Technology skills in public institutions

The study found out that most schools are operating in the absence of skills IT technicians to help in the maintenance of ICT infrastructure. More campaigns should be done to promote that awareness for ICT importance in a way that can encourage more students to enrol for IT curriculum in schools and join IT courses that will benefit e-service delivery. More incentives that are competitive with the private sector incentives should be made for people to take up IT jobs in the public sector, particularly in the Department of Education. This may help increase the number of qualified staff in the public schools. According to UNPAN, 2008, the success of e-government lies in the mobilization of internal resources, in particular skilled human resources to implement and manage change.

### 6.4.6 One stop gateway for education services.

It is recommended that the GDE further develops a fully comprehensive web portal for education services, inclusive of links to vacancies in the provincial schools and offices; link for online job applications; provision for uploading of relevant documentation required for clients to receive or give services to the government department. There is also need to enable networked information sharing between schools in order to reduce the problem of multiple enrolments of individuals in different schools.

### 6.4.7 Recommendation for further research

Since this study was carried out in one district only, its findings may not be generalized as painting a picture of what is happening elsewhere in the Gauteng province and they are not conclusive of the e-government implementation challenges of the province. It is recommended that further research be carried out

on a much wider scale to determine the effectiveness of the e-government initiative from a broader perspective.

In conclusion, e- government is a multi-year commitment. Althoughtechnology can be implemented swiftly; organizational transformation and change in user patterns happen more slowly (Bhatia, 2005). Hence, it is important to take note that the online application system as a new initiative may take some time before it actually sinks into people's minds that it has transformational impacts that benefit them. Initiators of the system should ensure its sustainability by ensuring that it is committed improvement of services regardless of the slow pace at which user pattern changes or adoption may take place. Commitment should be on mapping the path from pilot studies to sustainable, scalable systems. Thus, the implementation of the online system in 2016 can be regarded as further piloting done on a larger scale to determine the possible future requirements for improving the service delivery in the education department through use of e-services. Ultimately, it will one day greatly impact organizational change and service delivery in the agency.

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# ANNEXURES
# ANNEXURE 1: INTERVIEW GUIDE

| MAJOR QUESTION | THEME | SUB-THEMES UNDER THE QUESTION |
|---|---|---|
| 5.2.1 Perceived objectives of the online applications initiative | E-government vision | 5.2.1.1 Why are we pursuing the online application system |
| 5.2.2. E-Readiness factors that influence the GDE online application system in the district schools? | Readiness for e-government | 5.2.2.1 IT infrastructure<br>5.2.2.3 internet access<br>5.2.2.3 Skilled personnel |
| 5.2.3 Is there capability by applicants to use the online application system? | Perceived ease of use | 5.2.3.1 Literacy of applicants<br>5.2.3.2 Availability of resources |
| 5.2.4 Is the online applications initiative an easy and useful system for learner admissions? | Perceived usefulness of the initiative | How easy and useful is the new online application system |
| 5.2.5 What do you perceive as advantages of this new online | Relative advantage of the system | 5.2.5.1 Advantages for applicants<br>5.2.5.2 Advantages for schools / district office |
| 5.2.6 Any measures taken to cater for disadvantaged applicants? | Compatibility of initiative with needs and values of users | 5.2.6.1 Measures taken for the illiterate applicants<br>5.2.6.2 Measures taken for those without resources |

| | | |
|---|---|---|
| 5.2.7 What challenges were met in the implementation of the online system and how were they handled? | Complexity of the initiative | 5.2.7.1 Applicant challenges<br>5.2.7.2 Administrative challenges |
| 5.2.8 Generally, have parents / applicants shown willingness to use the new online application system? Give reasons for your answer | Observability of tangible results of initiative | 5.2.8.1 Applications submitted in time<br>5.2.8.2 Complaint/ compliments |
| 5.2.9 Is there a likelihood of the system being accepted by the citizens in future applications for admission? | Diffusion and adoption of initiative and | |
| 5.2.10 Suggestions / recommendations for the improvement of the online application initiative | How e-government can improve citizen participation in public affairs | 5.2.10.1 Recommendations for the GDE<br>5.2.10.2 Recommendations for the schools<br>5.2.10.3Recommendations for applicants |

# ANNEXURE 2: APPLICANT SURVEY QUESTIONNAIRE

NORTH-WEST UNIVERSITY
YUNIBESITI YA BOKONE-BOPHIRIMA
NOORDWES-UNIVERSITEIT
VAAL TRIANGLE CAMPUS

QUESTIONNAIRE FOR 2017 Grade 1 and Grade 8 APPLICANTS / PARENTS

Dear Parent / Guardian

The objective of this questionnaire is to assess the effectiveness of the GDE online application method for 2017 grade 1 and 8 learners as a service delivery tool and the attitude and feelings of the parent community towards this new system of applications and admissions.

You are therefore as a parent/guardian, kindly requested to help by answering the few questions below. Simply tick off the response most applicable to you and comment on spaces provided for the other question. Thank you in advance for your cooperation.

Sincerely

Dorothy Kanyemba (Researcher).

## A DEMOGRAPHIC INFORMATION

1. Please tick your age range:

   *0-17* ☐ *18-30* ☐ *31-40* ☐ *41-60* ☐ *60+* ☐

2. LEVEL OF EDUCATION ACHIEVED

   *Primary school level* ☐ *Secondary school level* ☐

   *University Graduate* ☐ *Other (specify)……...*

3. AREA OF RESIDENCE

   *Rural area* ☐ *Urban* ☐

   *Peri-urban (township)* ☐ *Informal settlement* ☐

## B. APPLICANTS' STATE OF E-READINESS

4 Are you computer literate / do you know how to use a computer? *Yes* ☐ *No* ☐

5 Do you know much about the internet? *Yes* ☐ *No* ☐

6 Have you ever used internet personally? *Yes* ☐ *No* ☐

7 Rate your knowledge and level of understanding of the following technologies on a scale of 1-4: [1 no knowledge (2) Poor Knowledge (3) Good Knowledge (4) Very Good Knowledge]

| | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| *Internet search by use of computer ( computer based internet browsing)* | | | | |
| *Internet searching by use of cell phone/ tablet (mobile internet browsing)* | | | | |
| *SMS* | | | | |
| Converting airtime to data bundles for internet (use of USSD) | | | | |

8 I have computer access:

*(a). at home* ☐ *(b) at work* ☐ *(c) not at all.* ☐

9 I have internet access

*a) at home* ☐ *(b) at work* ☐ *(c) no internet access* ☐

10 Which of the following is available in your community

- *Internet café* ☐
- *Free Wi-Fi* ☐
- *None of the above* ☐

## C THE GDE ONLINE APPLICATIONS PROCESS

11 What grade did you apply for your child for the year 2017?

*Grade 1* ☐ *Grade 8* ☐

12 Did you know about **where** and **when** to apply online / on the internet for your child's space in school?

*Yes* ☐ *No* ☐

13 How did you apply for your child's space?

- *From my own computer* ☐
- *From my cell phone.* ☐
- *From computer at my workplace.* ☐
- *Form a computer at a local school.* ☐

*14* Were you given enough information on the process to follow in applying online / on internet?

*Yes* ☐ *No* ☐

*15* Did you know how to apply on the internet? *Yes* ☐ *No* ☐

*16* Were you assisted in submitting the online application? *Yes* ☐ *No* ☐

17 The staff at schools / the education office was very willing to assist applicants without internet access / who are computer illiterate.

*Strongly Agree* ☐ *I Agree* ☐ *(2) Disagree* ☐ *Strongly Disagree* ☐ *Not sure* ☐

18 Has your child been offered space in a local school yet after the application? *Yes* ☐ *No* ☐

19 Indicate the month in which your child was offered space: *July* ☐ *August* ☐ *September* ☐

20 How did you receive feedback about your application?

*SMS* ☐ *E-mail* ☐ *I checked personally at schools* ☐ *No feedback received* ☐

21 Was your child offered space in the school of your own choice / first choice?

*Yes* ☐ *No* ☐

22 If you accepted the school offered, state what you did after receiving the message

- *I accepted through internet (online)* ☐
- *I went to the school to accept the offer* ☐
- *I did not do anything* ☐

## D PERCEPTIONS ON THE ONLINE APPLICATION SYSTEM

23 Using the online application system will save me money and time. *Disagree* ☐ *I Agree* ☐ *I don't know* ☐

24 If I used the application in my own home language it would be more helpful.

*I Disagree* ☐ *I Agree* ☐ *I don't know* ☐

25 The online application system is easy to use.

*Strongly Disagree* ☐ *Disagree* ☐ *I agree* ☐ *strongly Agree* ☐ *Neutral* ☐

26 I found it easy to log on to the GDE website and submit my application. *Disagree* ☐ *Agree* ☐ *Neutral* ☐

27 How would you describe this new online application system introduced by Gauteng Department of Education?

*Bad* ☐ *Good* ☐ *Excellent* ☐

28 Given a choice, would you choose to apply online in future? Yes ☐ No ☐

29 State any advantages of this method for you, if any._____------

_____

_____

_____

_____

30 Mention any problems you met if any, in using the internet application method_____

_____

_____

_____

_____

31 What do you suggest should be done to improve the online application system_____

_____

_____

_____

32 In how many schools was your child offered space?

- *No school offered*
- *One school*
- *Two schools*
- *Three schools*

**Thank you once again for your cooperation**

# ANNEXURE 3: INFORMATION LEAFLETS AND CONSENT FORM FOR RESEARCH PARTICIPANTS.

NORTH-WEST UNIVERSITY
YUNIBESITI YA BOKONE-BOPHIRIMA
NOORDWES-UNIVERSITEIT
VAAL TRIANGLE CAMPUS

PO Box 1174, Vanderbijlpark
South Africa, 1900

**TITLE OF THE RESEARCH PROJECT**: E-government innovation for effective service delivery: The case of Gauteng Department of Education (GDE) Online Applications.

**PRINCIPAL INVESTIGATOR**: DOROTHY KANYEMBA
**UNIVERSITY No**: (23232676)
**Address**: 18 Moseley street cw3 vanderbijlpark 1911
**CONTACT NUMBER**: 074 697 8597 Email: **dsikoya@gmail.com**

You are invited to take part in a research study that forms part of my Master's Degree in Public Management and Governance from September 2016 – November 2016. This form explains the purpose of the study, how you will be involved and your rights as a participant. Please know that your participation is entirely voluntary, you will not be forced to take part in the study but you are kindly being requested to help. The study has been approved by the Committee for Advanced Degrees (CAD) of the faculty of humanities of the North West University, Vaal Triangle Campus and the Gauteng Department of Education Research Unit.

The study will be conducted in the Sedibeng West District education Office and in four public schools in the district. Methods of study will be a questionnaire survey, semi-structured interviews and documents analysis. The objectives of this study are:

- To assess the ability and willingness of the citizens in the Sedibeng West District to use the internet application method for 2017 grade 1 and 8 learner admissions introduced by the GDE in April 2016.
- To evaluate the efficiency and effectiveness of the internet learner application and admission method as an improved method of delivering services to the 2017 academic year applicants for grade 1 and 8.
- To identify challenges and opportunities faced by both applicants and office based officials in using the method.
- To formulate recommendations that can ensure further improvement of the internet application method in future.

**Participants:** The following participants will be invited from the Sedibeng West District Education office, four public schools and the parents / community: two members of District management team, six GDE office based officials from the district office and schools, two primary and two secondary school principals and 88 parents/ guardians of potential grade 1/ 8 learners for 2017.

**You have been invited to participate because**:
you are EITHER a parent / guardian to a child who will be in grade 1or grade 8 in the year 2017 OR
you are an office based official who deals directly with the online admissions of learners / OR
you stay in the locality of the Sedibeng West District OR
you are a principal of a school in the Sedibeng West District
you are a management staff at the Sedibeng West District.
You would be excluded if:

- you do not have a child who will be in grade 1 or grade 8 in 2017
- you do not stay in areas found under the Sedibeng West District
- you applied for your child's space out of the Gauteng province.
- you applied for your child's space at a private school.
- You are not an official with direct involvement in the online applications

your school is not a public school.
**Your participation:** As a parent/applicant, you will be expected to complete a standardised questionnaire with about 29 questions that will check your knowledge and understanding of the internet, the online application process introduced for grade 1 and grade 8 applicants and your feelings about the new method of applications. You will simply tick off the answer that's suitable for you from those given for each question and write your comments in spaces provided for the three open questions in the questionnaire. You are expected to complete this questionnaire once.

If you are an office-based official, including principals and district management staff, you will be expected to participate in a semi-structured interview and to respond to a structured questionnaire based on the online application system and its influencing factors, its effectiveness in your field of work, its potential advantages, challenges faced during its implementation as well as your suggestions on how best to improve the system. You will also be kindly asked for copies of official documents in the form of enrolment records, waiting lists, final lists / statistics of students allocated space in the school.
**Benefits and Risks of the study**: The study will not provide direct benefits to you. However, your contribution and the research findings may help to reveal strengths and weaknesses of the internet/online application method and your suggestions may further improve the efficiency of district as well as school administration front and back office staff, enhance public schools' admission processes and promote speedy and quality services to applicants/ citizens. There are no identifiable risks associated with your participation in this study. However, should you have any concern or discomfort associated with your participation, please feel free to make the researcher aware.
Compensation for participation: You will not be paid to take part in this study. The researcher or research assistants will come to you for the interview or to distribute questionnaire therefore no costs in travelling will be involved on your part.
Confidentiality: the interview will be tape-recorded. However, your names and any identifying information will not be used in any part of the research report. All your information and interview responses will be kept confidential and they will not be shared with anyone else besides the researcher's supervisor.

**Research findings**: A pdf electronic copy of the dissertation, the research report summary and abstract will be submitted to the District Director's office and the principals' office where you can access them for your own viewing or it can be given to you by the researcher upon request.

Anything else you need to know? Please contact my supervisor, Prof. C Hofisi on this number 016 910 3455. You will receive a copy of this information and consent form for your own records.

**Declaration by participant**

By signing below, I ……..……. agree to take part in a research study. I declare that;

I have read and understood this information and consent form and it is written in a language with which I am fluent and comfortable.

I have had a chance to ask questions to both the person obtaining consent, as well as the researcher (if this is a different person), and all my questions have been adequately answered.

I understand that taking part in this study is voluntary and I have not been pressurised to take part.

I understand that what I contribute (what I report/say/write could be reproduced publically and/or quoted, but without reference to my personal identity.

I may choose to leave the study at any time and will not be penalised or prejudiced in any way.

I may be asked to leave the study before it has finished, if the researcher feels it is in my best interests, or if I do not follow the study plan, as agreed to.

Signed at .....…….. on……...……..……2016

Signature / Mark of participant……..

Signature of person obtaining consent ……..

## ANNEXURE 4: Sesotho translated applicant questionnaire

NORTH-WEST UNIVERSITY
YUNIBESITI YA BOKONE-BOPHIRIMA
NOORDWES-UNIVERSITEIT
VAAL TRIANGLE CAMPUS

Lenaane la dipotso ka 2017 Kereiti 1 le Kereiti 8 ho bakopi/BATSWADI

Motswadi/Mohlokomedi ya ratehang

Sepheo sa dipotso tsena ke ho hlahloba ho atleha ha GDE inthaneteng kapa mokgwa ona o etswe ka 2017 sehlopheng sa 1 le ho baithuti ba sehlopha sa 8 e le sesebediswa sa ditshebeletso le boikutlo hammoho maikutlong a mokgahlelo wa batswadi setjhabeng malebana le tsamaiso ena e ntjha ya dikopo tsena tsa baithuti.

Jwaloka motswadi/mohlokomedi, o koptjwa hore o thuse ka ho araba dipotso tse mmalwa mona ka tlase. Tshwaya dikarabo tse amanang le wena ka ho fetisisa mme o ngole dikarabo kahara dibaka tse fanweng bakeng sa potso e nngwe. Ke se ke lebohetse tshebedisano-mmoho ya hao.

Ka boikokobetso

Dorothy Kanyemba (Mofuputsi).

A. DITABA TSA MERABE KA HO FAPANA

1. Ke kopa o tshwaye dilemo tsa hao ka ho fetana:

   0-17 ☐ 18-30 ☐ 31-40 ☐ 41-60 ☐ 60+ ☐

2. Boemo ba THUTO e finyelletsweng:

   Bophahamo ba sekolo se tlaase ☐

   Bophahamo ba sekolo se bohareng ☐

   Koletjhe ☐

   Unibesithi ☐

   Enngwe……

3. Sebaka seo o dulang ho sona

   Mahaeng ☐

   Toropong ☐

   Ho dibaka tsa ditoropong (lekeisheneng) ☐

   Dibakeng tsa baipehi ☐

B. BOEMO BA HO BA MALALA-A-LAOTSWE BA BAITETI/BAKOPI

4. Na o tseba ho sebedisa khompheuta? Eya ☐ Tjhe ☐

5. Na o tseba haholwanyana ka inthanete? Eya ☐ Tjhe ☐

6. Na o ile wa sebedisa inthanete ka bowena? Eya ☐ Tjhe ☐

7. Lekanya tsebo ya hao le boemo ba kutlwisiso ya theknoloji e latelang ka tekanyo ya 1-4:
[1 ha o na tsebo (2) Tsebo e fokolang (3) Tsebo e hantle (4) Tsebo e hantle haholo]

   Ho fuputsa ka inthanete ka tshebediso ya khompheuta ☐

   Ho fuputsa ka selefounu/inthanete ho lekola ☐

   Ho fetola airtime ho dingata tsa inthanete(bundles) ☐

8. Ke na le phihlello khomphuteng:

   (a) Lapeng ☐ (b) Mosebetsing ☐ (c) Ho hang ☐

9. Ke na le inthanete

   (a) Lapeng ☐ (b) Mosebetsing ☐ (c) Ha ho letho ☐

10. Ke efe ho tse latelang e teng sebakeng sa heno

    Sebakeng sa diphuputso ☐

    Wifi ya mahala ☐

    Ha e yo ho tse ka hodimo ☐

C. DIKOPO TSA INTHANETE TSA GDE

11. Ke sehlopha sefe seo o ileng wa ngodisa ngwana wa hao ho sona bakeng sa selemo sa 2017?

    Sehlopha sa pele (1) ☐ Sehlopha sa borobedi (8) ☐

12. Na o ne o tseba hore ke hokae hape o neng o ka sebedisang inthanete bakeng sa ho ngodisa sebaka sa ngwanahao sekolong?

    E ☐ Tjhe ☐

13. O ile wa etsa jwang bakeng sa sebaka sa ngwana wa hao?

    Ka khompheuta yaka ☐

    Ka selefounu yaka ☐

    Ka khompheuta ya mosebetsing waka ☐

    Ka khompheuta ya sekolong sa sebakeng saka ☐

14. Na o fuwe boitsebiso bo lekaneng mabapi le tshebediso ho latela ho sebedisa inthanete? Eya ☐ Tjhe ☐
15. Na o tseba ho sebedisa kopo ya inthanete? Eya ☐ Tjhe ☐
16. Na o ile wa thuswa ho romella kopo ya hao ka inthanete? Eya ☐ Tjhe ☐
17. Basebetsi ba dikolong ba ne ba ikemiseditse ho thusa batho ba senang inthanete/ ba sa tsebeng ho sebedisa khompheuta

    O dumellana ka matla ☐ O a dumellana ☐ Ha o dumellane ☐

    Ha o dumellane ka matla ☐ Ha o na bonnete ☐
18. Na ngwana wa hao o ile a fuwa sebaka sekolong ka mora kopo ya inthanete?

    Eya ☐ Tjhe ☐
19. Bontsha dikgwedi tseo ka tsona ngwana wa hao a itholletseng sebaka se sengata:

    Phupu (July) ☐ Lwetse(August) ☐ Mphalane (September) ☐
20. O ile wa fumana dikarabo ka kopo ya hao?

    SMS ☐ E-mail ☐ Ke hlahlobile ka bonna dikolong ☐

    Ha ho na dikarabo tse amohetsweng ☐
21. Ngwana wa hao o ile a fumana sebaka sekolong sa kgetho ya hao/ sekolo sa pele?

    Sekolo sa kgetho yaka ☐

    Sekolo sa pele ☐

    Ha e yo ho tse ka hodimo ☐
22. Ha e ba o filwe kamohelo sekolong, bolela seo o se entseng kamora ho amohela mpho eo:
    - Ke ile ka dumela ho pholletsa ka inthanete ☐
    - Ke ile ka ya sekolong ho amohela mpho eo ☐
    - Ha ke a ka ka etsa letho ☐

**D. MAIKUTLO KA TSAMAISO YA KOPO YA INTHANETE**

23. Ho sebedisa kopo ya inthanete tsamaiso e tla mpolokela tjhelete le nako

    Ha o dumellane ☐ O a dumellana ☐ Ha ke tsebe ☐
24. Haeba ke ne ke sebedisa kopo ka puo ya lapeng e ne e tla ba molemo ho feta

    Ha o dumellane ☐ O a dumellana ☐ Ha o tsebe ☐
25. Ho bonolo ho sebedisa kopo ya inthanete

    Ha o dumellane ka matla ☐ Ha o dumellane ☐ O a dumellana ☐

    O dumellana ka matla ☐ Ha o nke lehlakore ☐

26. Ke ile ka fumana ho le bonolo ho kena websaeteng ya GDE le ho romela kopo yaka.

    Ha o dumellane ☐ O a dumellana ☐ Ha o nke lehlakore ☐

27. O ka e hlalosa jwang tsamaiso ena e ntjha ya kopo ya inthanete e sebedisitsweng ke Lefapha la Thuto la Gauteng?

    Hampe ☐ Hantle ☐ Hantle haholo ☐

28. O fuwe kgetho, na o ka kgetha ho sebedisa inthanete kamoso?

    Eya ☐ Tjhe ☐

29. Bolela menyetla ya mokgwa ona bakeng sa hao

    _____
    _____
    _____
    ____

30. Bolela mathata ao o kopaneng le ona ha o ntse o sebedisa kopo ya inthanete.

    _____
    _____
    _____
    _____

31. O nahana ho lokelwa ho etswa jwang ho ntlafatsa kopo ya inthanete?

    _____
    _____
    _____
    _____

32. Ke dikolong tse kae moo ngwana wa hao a filweng sebaka?

    Ha ho sekolo se filweng ☐
    Sekolo se le seng ☐
    Dikolo tse pedi ☐
    Dikolo tse tharo ☐

**Ke boela ke leboha bakeng sa tshebedisanommoho yahao**

## APPENDIX 1: Login guide for administrators

GAUTENG PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

# A STEP–BY–STEP LOGIN GUIDE FOR SCHOOL ADMINISTRATORS

Administrators access the web address: http:// www.gdeadmissions.gov.za to be on the "**Welcome to Online Application for 2017 Admissions**" page

## LOGIN PROCESS

**STEP 1**

Click on the **Login** link, select **Administrative login** and click on **School Admin**

**STEP 2**

**Use created login credentials to login**

- Administrators who created login credentials in 2015 use the same credentials to **Sign In**
- Administrators who may have forgotten login credentials click the **Forgotten Password** to create new login credentials
- First time users will click on **Sign-up** to create login credentials
  **NB (PERSAL is the username for All Administrators**)

**STEP 3**

After logging in as an Administrator the following Menu on the landing page will be displayed