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e-Government in South Africa :

Predictors to failure and success

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A research report submitted to the Faculty of Engineering and the Built Environment, University of Witwatersrand, Johannesburg, in partial fulfilment of the requirements for the degree of Master of Science in Engineering.

Johannesburg, 2012

Declaration

I declare that this research report is my own, unaided work, other than where specifically acknowledged. It is being submitted for the degree of Master of Science in Engineering in the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination in any other university.

Signed this _____ day of January 2012

_____

Kirendharen Nadarajh Pillay

Abstract

This research project examines the predictors that make e-government projects successful or unsuccessful. The aim of this research is to determine the factors that can lead to an e-government project's success or failure. This is done within the South African context. The factors are determined via a Literature survey of selected implementations around the world. Existing e-government implementations , SARS e-Filing and eNaTIS were assessed using the Technology Acceptance Model(TAM). Factors such as having a governmental policy, marketing, training and change management are identified as positive factors. Impediments such as the digital divide, lack of skills, lack of penetration of technologies to all citizens have been determined as challenges to e-government. It is recommended that investigation into mobile phone technologies be done to bridge the telecommunications gap.

Keywords: TAM, e-government, eNaTIS, e-Filing

Table of Contents

Chapter 1 :INTRODUCTION 10

1.1 Research Problem.....11

1.2 Research Questions.....12

Chapter 2 : LITERATURE REVIEW 13

2.1 Introduction.....13

2.2 E-democracy.....13

2.3 Classification of Stages of e-Government.....14

2.3.1 ANAO Model.....15
2.3.1.1 Stage 1 - Publishing Information.....15

2.3.1.2 Stage 2 - Interaction.....15

2.3.1.3 Stage 3 - Transaction of secure information.....15

2.3.1.4 Stage 4 - Sharing Information with other Agencies.....16

2.3.2 Layne & Lee model.....16
2.3.2.1 Stage 1: Catalogue.....16

2.3.2.2 Stage 2: Transactions.....17

2.3.2.3 Stage 3: Vertical integration.....17

2.3.2.4 Stage 4: Horizontal Integration.....17

2.3.3 Hiller & Bélanger model 18
2.4 Technology Acceptance Model (TAM).....19

2.4.1 Limitations of TAM.....21
2.4.1.1 Limitations in the methodology used for testing the TAM model

.....21

2.4.1.2 Limitations on the variables and relationships in the system.....21

2.4.1.3 Limitations in the theoretical foundation.....21

2.5 Review of current e-Government implementations.....22

2.5.1 South Africa.....24
2.5.1.1 Batho Pelo.....24

2.5.1.2 Current Projects.....26

2.5.1.3 Implemented Projects.....27

2.5.1.3.1 Successes.....28
2.5.1.3.1.1 South African Revenue Service e-Filing.....28
2.5.1.3.1.2 Johannesburg Metro.....32
2.5.1.3.2 Failures.....33
2.5.1.3.2.1 Home Affairs - “Who Am I online”.....33
2.5.1.3.2.2 Golaganang.....34
2.5.1.3.2.3 Electronic National Traffic Information System (eNaTIS).....35
2.5.1.4 Standards and Open Source Software.....36

2.5.1.4.1 Minimum Interoperability Standards (MIOS) for Information Systems in Government 37
2.5.1.4.2 Open Standards.....37
2.5.1.5 ICT in Rural South Africa.....38

2.5.2 United Kingdom.....40
2.5.2.1 Monitoring progress.....41

2.5.2.2 Perception of Staff.....42

2.5.2.3 Availability and Quality of information on e-Government/e-Democracy.....42

2.5.2.4 Skill and knowledge gaps.....42

2.5.2.5 Engagement with citizens.....43

2.5.2.6 Limit of penetration of e-Government.....43

2.5.2.7 e-Government Interoperability Framework (e-GIF).....44

2.5.2.7.1 Drivers behind e-GIF [23].....45
2.5.3 Slovakia 46
2.5.3.1 General Issues.....48

2.5.3.1.1 Digital Literacy.....48
2.5.3.1.2 Willingness to learn.....49
2.5.3.1.3 Digital Divide.....50
2.5.4 Brazil.....51
2.5.4.1 Interoperability specifications.....52

2.5.4.2 Challenges.....53

2.6 General Obstacles to e-Government 54

2.6.1 Hard-soft gaps.....54
2.6.2 Security.....55
2.6.3 Privacy.....55
2.6.4 Economic Disparities 56
2.6.5 Digital Divide.....57
2.6.6 Education.....58
2.6.7 Accessibility.....58
2.6.8 Prioritization 58
2.6.9 Citizen awareness and confidence 58
2.6.10 Resistance to e-Government.....59
2.6.11 Government/Vendor Trust.....59
2.7 Recent Trends in e-government 60

2.7.1 Crisis Response Websites.....60
2.7.2 Web 2.0.....60
2.7.3 Open Data.....61
2.7.4 E-Participation.....61
2.8 Summary.....62

Chapter 3 :PROCEDURE FOR EVALUATION OF CURRENT

IMPLEMENTATIONS IN SOUTH AFRICA 63

Chapter 4 : RESEARCH METHOD 65

4.1 Research Design....65

4.2 Questionnaire....65

4.3 Limitations....66

4.4 Summary....67

Chapter 5 : ANALYSIS and DISCUSSION OF RESULTS....68

5.1 eNaTIS....68

5.1.1 Perceived usefulness....69
5.1.2 Perceived ease of use....69
5.2 SARS e-Filing. 71

5.2.1 Perceived usefulness....71
5.2.2 Perceived ease of use....72
5.3 Other technologies....74

5.4 Factors Influencing Success and Failure....74

5.4.1 Positively Contributing Factors:....74
5.4.1.1 Unified high-level strategy for e-Government....74

5.4.1.2 e-Government Champion....75

5.4.2 Impediments and Barriers....75
5.4.2.1 Telecommunications....75

5.4.2.2 Corruption....76

5.4.2.3 Prioritisation....76

5.4.2.4 Geographic Sparseness....76

5.4.2.5 Security/Lack of Trust....77

5.4.2.6 Lack of Skilled resources....77

5.4.2.7 Socio-Economic Disparities....78

5.5 Critical Discussion of eNaTIS & SARS.....78

5.5.1 eNaTIS.....78
5.5.2 SARS.....79
Chapter 6 : CONCLUSIONS and RECOMMENDATIONS 81

Chapter 7 :REFERENCES 84

Appendix A: Method of analysis 96

Appendix B: Evaluation of user-experience 97

Appendix C: Questionnaire.....98

Appendix D: Survey Results.....99

List of Abbreviations:

PEOU	Preceived Ease of Use
PU	Perceived usefulness
SARS	South African Revenue Service
eNaTIS	Electronic National Traffic Information System
DoT	Department of Transport.
NGO	Non-Governmental Organisation
TAM	Technology acceptance model
DPSA	Department for public service and administration
DOHA	Department of Home Affairs
IT	Information Technology
WAP	Wireless Application Protocol

Chapter 1 : INTRODUCTION

Definition:

> ”eGovernment is the use of information and communication technologies (ICTs) to improve the activities of public sector organisations. “ [1]

With traditional means of communication between government and its citizens, citizens are required to physically come into contact with government officials at government buildings. e-Government involves streamlining the process where information and transactions are possible or available on-line or via other electronic media. This removes the inefficiencies inherent in traditional governmental approaches, which include long-winded paper trails and delays between interacting government departments. Also inaccuracies due to human error are removed by making processing as automatic as possible [1,43].

This report consists of a statement of the research question in Chapter 1. Chapter 2 consists of a literature review, where the classifications of e-Government are defined. The Technology Acceptance Model as a means of evaluating current solutions is discussed. A review of four country's e-Government implementations is made and obstacles to e-Government in general is discussed. Recent trends in e-Government are also touched on.

Chapter 3 discusses the use of the technology acceptance model (TAM) for the

evaluation of current implementations. Chapter 4 discusses the research design and the survey questionnaire that was used. It describes the procedure that was used for the evaluation of the SARS e-Filing and eNaTIS e-Government implementations.

Chapter 5 discusses the results of the survey. From purely a TAM point of view, SARS e-Filing and eNaTIS where found to have a high probability of success.

Chapter 6 contains the conclusions of the report. It is concluded that that the existing e-government implementations of SARS e-Filing and eNaTIS were successful and partially successful respectively. Factors such as having a governmental policy, marketing, training and change management are identified as positive factors. Impediments such as the digital divide, lack of skills and lack of technological penetration of to all citizens have been determined as challenges. An investigation into mobile phone technologies is recommended to find a way to bridge the telecommunications gap.

1.1 Research Problem

This research examines how e-Government is being implemented in South Africa, and what its shortfalls are with respect to the South African context, especially with the presence of a digital divide as well as an economically and geographically divided society. In addition, the research attempts to propose solutions for the implementation of e-Government to previously-disadvantaged communities.

1.2 Research Questions

South Africa has made many attempts at e-Government projects, some of which were successful and some not. This research paper aims to determine the factors which contribute to the success or failure of these kinds of projects. This is done by studying a number of existing and past projects around the world.

Some projects have been successfully implemented, however their utilization by citizens is low. The theory of the Technology Acceptance Model (TAM) is brought into play, and its role is discussed. The application of TAM on current e-Government applications is used as a predictor to their success.

There is a lack of infrastructure investment and telecommunications costs are high in South Africa [13]. South Africans are spread along great geographic areas including rural areas. For government to reach out to these citizens, there needs to be investment on telecommunications infrastructure, for the efficient delivery of e-Government services to these people.

We also need to look at the benefits that e-Government can bring to the previously disadvantaged individuals (PDI). Can e-Government help them live a better life, with better service-delivery and knowledge of their surroundings? What are the obstacles that e-Government face when trying to reach the PDI community.

The question that this proposed research attempts to answer are:

- Why certain e-Government projects are successful and why some are failures?
- What are the suggested practices required to make an e-Government project successful?

Chapter 2 : LITERATURE REVIEW

2.1 Introduction

For this report, a literature review of existing e-Government solutions was performed. A look at the historical lesson's learnt from them provide answers as to what steps or factors work towards or against an e-government system. A mixture of first and third-world countries' implementations was studied.

There have been a mix of successful and unsuccessful implementations of e-Government throughout the world. e-Government is of special interest to the United Nations Public Administration Network (UNPAN). The UN has decided that the use of e-Government in Public Administration is an important way of improving the development and administration of countries in the world [19].

There are several e-Government projects that have been undertaken by governments worldwide. First-world countries like Canada and the UK as well as Third-world countries like India and Brazil have e-Government initiatives. The success rate varies depending on the circumstances that the e-Government application is deployed in. e-Government implementers should ask the question: “How can I maximise the probability of success of their e-Government projects” [19].

2.2 E-democracy

e-Government is an enabler of e-democracy, where citizens can perform certain interactions with government, to enhance the citizen's democratic abilities. This kind of participation can benefit all of the stakeholders in a government, and take

democracy to a higher level [3].

e-Government can assist with e-democracy in the following areas:

“ 1. Policy development and political leadership
2. Enhanced information access and e-mail notification
3. Representative strategies in parliament and local councils
4. Online consultation and communities of practice”

[3]

Citizens can voice their opinions either in groups or in their individual capacities regarding burning issues within Government. Government can request commentary from citizens via electronic channels and speed up the process required for passing a bill for example. The use of online chats with key government officials is a good way for people to interact with their leaders[3]. Social networking sites such as Facebook can facilitate these kind of interactions [61].

2.3 Classification of Stages of e-Government

There are four commonly-used models for the implementation of e-Government:

- ANAO (Australian National Auditing Office) model [8]
- SAFAD (Swedish Agency for Administrative Development) Model. [8]
- Layne & Lee Model [8]
- Hiller & Bélanger Model [22]

The models presented here are not exhaustive, as there are always new models

that are becoming available. These new models are more or less similar to the ones discussed below.

2.3.1 ANAO Model

This model was created by the Australian National Auditing Office in order to audit the delivery of various government agencies, and to provide information as to what content to deliver over the internet [8].

2.3.1.1 Stage 1 - Publishing Information

This involves publishing information that is visible online on the web. Users can search for information they are looking for. Access to the information is available to the general public. There is usually the ability for the user to make enquiries from the government agency.

2.3.1.2 Stage 2 - Interaction

The stage provides limited accessibility to government databases. Users have expanded search capabilities and are able to search and filter information. Calculations relating to government debts and government subsidies are possible.

2.3.1.3 Stage 3 - Transaction of secure information

This stage requires secure identification of the individual who interacts with the government agency. Private data of the individual is available for use for eliciting services from government. An example of this is lodging tax returns. Because of the sensitive and private nature of this process, security, privacy and financial transactionality have to be taken into account.

2.3.1.4 Stage 4 - Sharing Information with other Agencies

This involves the sharing of common data for an entity which may be a user, business or organization. Usually a piece of data such as an address is used across multiple databases, and a change in one, needs to be reflected correctly among all the databases, providing consistency of the data. This stage like stage 3 requires the correct identification of the user [8].

1.1.SAFAD Model

The SAFAD model is very similar to the ANOA model and includes more specific indications of what should be available through the model. It will not be discussed further.

2.3.2 Layne & Lee model

This model was created out of the e-Government services in USA. It is more applicable to a federal government structure where the research was done but can be applied at other levels as well.

2.3.2.1 Stage 1: Catalogue

This is where the agency establishes an online presence. The pressure for this is caused by public and business expectations. The list of services that the agency can provide as well as the publications made by the agency are made available online. The information published is general in nature.

2.3.2.2 Stage 2: Transactions

In this stage the online system will integrate with the operation of the agencies. Transactions such as paying traffic licences and fines would be possible. Users can communicate directly with the back-end processes of the agency via the web-interface. This interaction would be without interaction with agency staff.

2.3.2.3 Stage 3: Vertical integration

This stage is based on handling the distinction between government functions and the various levels of government. Vertical integration handles similar functions but in different levels of government. An example of this is the integration of a local business licence application linked to the state and the governmental level to obtain an employer identification number. This stage handles the integration between local level systems to higher-level systems.

2.3.2.4 Stage 4: Horizontal Integration

This stage handles the integration of information systems with different functionality but has a relation in common to the users. An example of this is paying taxes or fees at one time, meant for different government agencies. This is made possible through the integration of the various systems in the different agencies.

2.3.3 Hiller & Bélanger model

This model by Hiller and Bélanger (2001) differs from the models above in adding a fifth stage, which brings in the importance of political participation. In this stage, citizens can vote and provide comments online [22].

	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

Table 1: Hiller & Belanger Model [22]

In the above model, the stages of e-Government are defined at various levels of type of government. e-Government for individuals is defined for a service like medical benefits, tax payments etc. For political services, voting and activities are defined. The government to business category includes making regulatory information available online, up to filing comments online.

The Government to Business Marketplace is for the advertising of government

tenders to private business. Request for Proposals are found here, and businesses may request clarification on these proposals.

The Government to Employees category handles the internal HR functions of government's agencies. This would provide the functions that would alleviate the burden of the administration that comes with large organisations with a large number of employees. The functionality offered here would be similar to employee self-service applications that are employed with private enterprises.

The last category would involve government to government communications. This includes the vertical integration between state and regional government agency. Electronic fund's transfer is included here [22].

2.4 Technology Acceptance Model (TAM)

The technology acceptance model is a model developed by Fred Davis. It is an information systems theory which models how a user goes about using and accepting a technology.

The model proposes that when a user is presented with a new technology, certain factors will determine if he will use it again and will accept it. These factors are:

- Perceived usefulness (PU) - "the degree to which a person believes that using a particular system would enhance his or her job performance".
- Perceived ease-of-use (PEOU) - "the degree to which a person believes that using a particular system would be free from effort" [16]

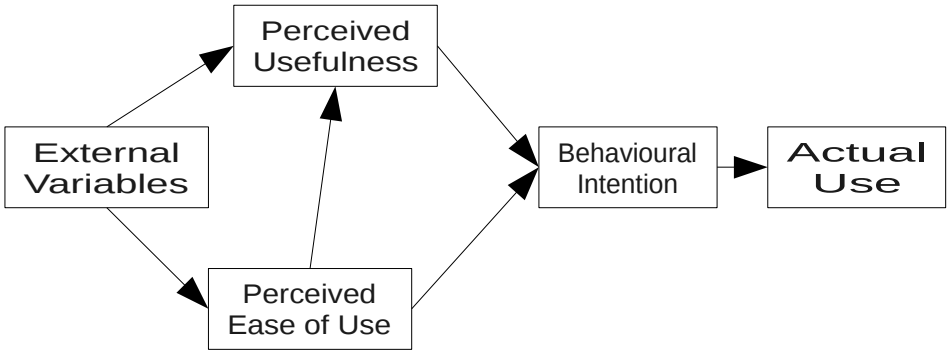

Figure 2.1: Technology Acceptance Model [16]

As illustrated in figure 1, the TAM states that the user's behavioural intention (BI) to use a system is determined by perceived usefulness (PU) and perceived ease of use (PEOU). Perceived usefulness is a measure of how useful a user finds a system in doing his job. PEOU is a measure of how easy it is to use a system to perform a certain task.

Perceived usefulness and Perceived Ease of Use are also controlled by the effect of external variables such as training as well as system design . A system that has good ease of use is perceived to be more useful. EOU and PU lead to behavioural intention of the users to use the system. This intention to use the system leads to the actual system use.

Even though the e-Government technology may be available to citizens, its perceived ease of use (PEOU) and perceived usefulness (PU) need to be adequate enough to increase usage of the technology. This is applicable to both to the citizens and the government officials using the system. The theory of the TAM has a direct relationship with the acceptance of e-Government in South Africa.

Government officials need to feel they are able to be more productive in the

execution of their duties. Citizens need to feel they can trust the e-Government system, and also find usefulness in using the system. [44,5]

TAM can be used by performing a TAM system assessment, and then from there, should the assessment be poor, the variables of the system PU and PEOU can be addressed to improve its intention-to-use.

2.4.1 Limitations of TAM

There have been many criticisms of the TAM model [66].

2.4.1.1 Limitations in the methodology used for testing the TAM model

The data that was gathered to support the model is subjective, as the user's provided self-reported usage data of the systems instead of actual usage data.

2.4.1.2 Limitations on the variables and relationships in the system

Researchers have shown that PEOU may have a higher importance than PU in a mandatory setting where users are forced to use the system. This is the situation with eNaTIS and SARS to a degree, since users can still perform the actions manually. Also other factors that may a direct influence: such as system experience, level of education and age are not included in this model.

2.4.1.3 Limitations in the theoretical foundation

Bagozzi (2007) found issues with the formulation of the TAM model, where he states that the intentional-to-actual use link is not strong. He states that behavioural intention should not be used as the end goal. He also stated that the intention to use the system does not necessarily mean a user will actually use the system because of the time-gap between the two. It that time, due to other factors, the user may change his mind to use the system upon reflection.

TAM is also undergoing constant revision and extension, with TAM 2 and TAM 3 models being put forward for more current research as well as the Unified Theory of Acceptance and Use of Technology (UTAUT) [71].

Even with these limitations, the original TAM model has been used widely and will be used to evaluate the the SARS and eNaTIS systems.

2.5 Review of current e-Government implementations

There are many e-Government implementations world-wide. The wealthier first world countries have the better implementations of e-Government and lead the field. The most influential governments among others are the UK, Canada and Australia.

From the research, it was apparent that most government implementations had an overriding policy or strategy which guided the government implementations. Coupled with these policies, standards were put forward for implementations of e-Government in an effort to facilitate interoperability and ensure the quality of the systems. Policies such as the use of open technologies are part of these strategies and is touched on briefly.

The current state of e-Government in South Africa will be looked at, followed by

the UK, Slovakia and Brazil. The UK is a first-world country while Slovakia a second-world country [59]. Brazil and South Africa fall under the third-world category, and should have similar learning experiences for each other in terms of e-Government. The reason behind the choice of these countries is to give a broader view of e-Government in the different types of economies, however countries in the same category can differ a lot.

In the following cases studies, the reader will see common themes where the positive and negative factors can be found.

Positive Factors:

- Political will and government
- Need for standards
- The need for marketing of the systems
- Open standards and interoperability

Negative Factors:

- Corruption
- Limit of penetration to end-users/Digital Divide
- Skill-levels of users/training

These are discussed further in Section 5.4.

2.5.1 South Africa

e-Government projects in South Africa, are still for the most part in their infancy phase. South Africa is regarded as a third-world country by the rest of the world. There are new efforts by government to implement e-Government in municipalities and government departments such as labour, the revenue services (SARS) for example. The State agency for Information Technology (SITA) also has an e-Government initiative . According to the UN e-Government survey 2010 [61], South Africa is ranked 4th in Africa and 97th in the world.

In the author's opinion, by using SARS e-Filing as the yardstick, South Africa is in stage 3 of the ANAO model.

2.5.1.1 Batho Pelo

The government introduced the Batho Pelo programme in October 1997.

“Batho Pele requires that eight service delivery principles be implemented

- regularly consult with customers
- set service standards
- increase access to services
- ensure higher levels of courtesy
- provide more and better information about services
- increase openness and transparency about services
- remedy failures and mistakes

- give the best possible value for money “ [41]

It can be seen that most of these policy principles are the basis for the introduction of an e-Government system. Subsequently in 2001, the DPSA had put forward a strategy document, called the “Electronic Government The Digital Future A Public Service IT Policy Framework” [40]. This document served as the high-level framework for the implementation of e-Government in South Africa. It outlines the aims of government in SA, and highlights increased productivity, cost-effectiveness and improved service-delivery as the measurable benefits.

According to the above document, in order for the e-Government projects to be successful, their main focus areas should be on :

- Interoperability
- IT Security
- Economies of Scale
- Elimination of Duplication

The Department of Public Service and Administration(DPSA) has since presented the “DPSA MEDIUM TERM STRATEGY 2009-2012”. It references President Jacob Zuma's call for service-delivery in his state-of-the-nation address, which indicates that political support, an important ingredient for successful e-Government is present [47].

2.5.1.2 Current Projects

Some of the major ongoing e-Government projects with their estimated values are given below:

* Who am I online: Department of Home Affairs – Gijima AST (R2 billion over five years);
* Global Deployment of VOIP: Department of Foreign Affairs (R112 million);
* IFMS Project: National Treasury (R4 billion). The scope of this project covers financial management, HR management, supply chain management, asset management and business intelligence across both national and provincial levels;
* Human resources business process management system: Department of Public Service and Administration (DPSA) – SAP (R800 million);
* Learner Tracking System, records keeping and provincial education projects: Department of Education – SA Treasury has allocated R136 million towards this project, to be shared among the provinces while R30 million has been allocated at national level;
* Local wireless broadband: Cape Town is currently rolling out its own wireless broadband, with the first phase to cost R275 million over five years. [36,58]

As can be seen, there are a number of projects that are in progress in government, which is positive. Some of them are small while others have very large budgets.

2.5.1.3 Implemented Projects

Municipalities are embracing e-Government well, including the municipality of Johannesburg (www.joburg.gov.za). Johannesburg citizens are able to pay rates and taxes online, as well as electricity, water and speeding fines among others.

The South African government has indicated its support for the process of implementing e-Government in the President's state of the nation speech in 2002 [25,26]. Since then, there have been efforts to bring about e-Government into South Africa from DPSA together with SITA. Dr. Fraser Moleketsi, ex-Minister of DPSA, in a tender technical briefing session voiced her support for e-Government initiatives in government [27]. The current President is also supportive of service-delivery improvement, however, he is not emphasising the use of IT, but rather is emphasising the actual delivery happening. It can be seen here that IT is an enabling technology for service-delivery.

There have been other projects like Golagnang by the DPSA which attempted to get its staff to become more computer-literate by offering them discounts on computers. These projects were ambitious but failed to make the required progress in the required time[9] .

The South African Revenue Service embarked on an e-Government project to complete tax returns on-line. This has been a successful project, as the SARS reported an increase in tax collection and tax-payers received their refunds earlier than the traditional manual input method [66].

We will now look at the implemented projects, categorizing them by success or failures. Thereafter, other significant initiatives like the Minimum Interoperability

standards (MIOS) and the use of open standards are discussed.

2.5.1.3.1 Successes

2.5.1.3.1.1 South African Revenue Service e-Filing

The South African revenue service (SARS) has put a system in place since 14 July 2003 for taxpayers to submit their tax returns [66]. Taxpayers register with the service and capture their tax returns online, instead of using the traditional paper format. The online return is assessed by the tax officials and and the taxpayer's is either refunded or has to pay in.

This system displays the many benefits inherent in e-Government systems. The time taken to process the information is much quicker than the traditional method, which normally takes months. The risk of losing the tax return and supporting documents in the postal system is removed. It must be remembered that the business process of the tax return was changed in order to accommodate the online system. Where previously one would have sent the supporting documents to SARS to keep, the system/legislation makes the rule that the user keep the supporting documents for 5 years. This was a crucial decision, as this reduces the unnecessary storage necessary to keep this information. The onus is on the taxpayer for this responsibility. Also, the possibility of losing the tax return is practically zero once submitted electronically (barring unlikely online data storage disasters).

> “In 2008, almost 2 million individual tax returns were submitted through e-Filing and annually over 7.5 million returns are submitted by businesses

and practitioners.” [20]

This initiative was initially for ordinary citizens to use or and has since also allowed businesses to lodge their returns online. VAT submissions, Pay as you earn (PAYE) submissions and other taxes can be done in this manner.
In this kind of e-Government system, the incentive to use it is clear, as everyone benefits from the efficiency of this process. Returns are processed quickly because there is no transit time between taxpayer and the department. There's no need for manual filing of the documents on the SARS side which makes the administration and processing of the returns quicker and easier.

For the 2009 tax year, penalties were introduced for late submission which increased the return rate. The effect of this kind of law may distort the results of a TAM analysis of the system. It could be that people were forced to make their returns and avoid heavy penalties, hence their actual use of the system increased. As previously discussed in the limitations of TAM, this impact is not catered for in the TAM theory.

The system can be deemed successful from positive reports [64]. The following are performance statistics for 2010/2011 year:

- More than six million South Africans are filing their tax returns electronically, 12 times more than five years ago,
- 81% of taxpayers filed their tax returns on time during the 20101/11 financial year
- 11% reduction in outstanding returns compared with the previous financial year and this resulted in R17.7bn recovered from the debt book.
- More than 125 000 taxpayers were issued with penalties for outstanding

returns and this resulted in an additional R191m. million collected

It must also be noted that the improvements made by the e-Filing system was also supported by a non-technical strategy [65] which has made SARS quite successful in its own right and not necessarily its e-Filing system only. Training as well as call-centres to help users was set up. A taxpayer can get telephonic or online assistance if issues are encountered when using the system.

The question arises as to which party the SARS e-Filing system is successful for. There are 3 stakeholders, government (SARS), the taxpayer and the tax consultants.

A document from the Organisation for Economic Co-operation and Development (OECD) [71] outlines the key benefits for each:

SARS

- There is a reduction is paperwork, postage, printing costs. Together with this is the lower risk of correspondence getting lost or delayed in the postal system. There is reduced time spent per query probably because of the use of a computer system than working with paper.
- The reconciliation process is also automated and there is increased accuracy of taxpayer data. The author is unsure how taxypayer data is more accurate than before though, since this information was stored on IT systems before.
- Improved service delivery to tax practitioners and taxpayers. The article claims a guaranteed revenue stream, which the author does

not see as a result of the SARS e-Filing system.

Taxpayers

- Taxpayers now have a system that records all interactions with SARS. This provides convenience factor as users don't have to develop their own filing system for the information, and there is little chance of communications being lost.
- They claim greater accuracy in submissions and returns which the author disagrees with. There could be fewer errors because users don't cause handwritten mistakes as the information is captured on online forms.
- There is greater flexibility to interact with SARS, as one can email them, send a message via the portal or contact them via a call-centre.
- There is an additional 3-5 day window to submit certain payments which is probably a result on doing the transactions using online banking etc. rather than using the old systems of depositing money at a bank and faxing deposit slips which could go to the wrong person at SARS.
- Full support via the web or dedicated call center
- Reconciliation and confirmation of forms and payments
- There is also a reminder service in the form of email or SMS.

Tax Practitioners

- Tax practitioners that use e-Filing have a competitive advantage over those that don't. They are able to handle many more customers. There is also improved management, auditing and accuracy of client records and subsequent transactions with SARS.

- They have a faster turnaround time regarding queries and responses and have have an Additional time window to submit VAT payments.
- Over and above these, they get the same advantages as the ordinary tax-payer, viz., email and SMS reminders, increase payment flexibility
- Dual reminder service via email and SMS;
- Increased flexibility regarding payment options to SARS;

2.5.1.3.1.2 Johannesburg Metro

The Johannesburg Metro (http://www.joburg.org.za/) is the online website of the city of Johannesburg. It is a stage 2 e-Government system providing information, allowing communication between the municipality and the citizen as well as allowing transactionality where users can pay for services online.

The following information is available from it, among others:

- Land valuations
- Rates and taxes information
- Traffic Fines
- Newsletters
- Information on pay-points
- Information on hospitals public and private
- Online Maps, Free and Subscription service

To enter the next stage in the ANAO model, the system needs to allow transactional services directly from the web-site, which it does not. Currently

people have to pay via physical pay-points or can pay via internet transfers into the respective bank accounts. Sister sites are available with transactionality, e.g. (www.payfine.co.za), where one can pay a traffic fine by credit card.

Residents of Johannesburg have a view of their standing with the municipality in terms of rates and taxes which is useful. The user can also pay online so he doesn't have to stand in queues in order to pay his rates. There are alternative means of rates payment such as post-offices and certain large retail stores, but the convenience of paying by internet banking does seem more attractive in the author's opinion.

The reasons for this site's success is that it provides both the user and the customer an easier and quicker way of transacting . The citizen doesn't have to wait on the phone in order to find his balance, he can query it online. Applying TAM, its usefulness should motivate him to actually use the service and possibly improve the regularity of his payment.

2.5.1.3.2 Failures

2.5.1.3.2.1 Home Affairs - “Who Am I online”

This project was awarded by the Department of Home Affairs to Gijima AST in 2008. the project involved a unified portal for a citizen's life. It would have integration with the Automated Fingerprint Identification System (AFIS), and would allow for future integration with new smart-card technologies. The system would remove the need for paper in the delivery of passports and identification book. The delivery date for the project was in 2010 [41].

In 2010, the department cancelled the contract due to non-delivery. There was also claims of irregularities by SITA. Jonas Bogashi also left SITA just before the tender was awarded to become CEO of Gijima, which is a conflict of interest, since he would have been involved in adjudicating the tender. There was also another tender involving identity books that was cancelled due the name of a bidder being leaked.

At the time of writing, Gijima and Home Affairs were in a legal battle over the legality of the contract [42].

2.5.1.3.2.2 Golaganang

In 2002, SA government made an attempts to bring computer technology to its public service workers via the Golaganag project.

> “Golaganang (meaning 'come together') was a joint initiative between the South African government and the private sector to provide public service employees with an affordable computer bundle. This would include a multi-media PC, operating system and application software, a modem and Internet connectivity, a printer, free installation, a three-year extended warranty, interactive tutorial software plus three hours basic computer skills training for the employee and one family member.” [9]

This project had good intentions but did not succeed as planned. HP wanted a guarantee of $37m for the project as they could not accept the risk. This was not what was initially proposed to the cabinet. The project did not address the financial aspects. There was a misunderstanding between the two parties with respect to the costs and risks of the project. The project was subsequently cancelled [9].

2.5.1.3.2.3 Electronic National Traffic Information System (eNaTIS)

eNaTIS was developed as a replacement for the previous NATIS system. The system manages functionality such as:.

- All vehicle licensing,
- vehicle registration,
- driving licences,
- contravention,
- accident and infrastructure transactions.

The system initially proved to be slow, and there was a lot of downtime that caused a lot of problems in the government departments it was supposed to help.

There were issues with the performance of the initially launched system [28]. This was due to the database server's not being powerful enough to handle the transactions.

> **“**The Transaction Processing Performance Council's TPC-C benchmark indicates that the best system from a price/performance standpoint would be expected to handle 82,774 New-Order transactions per minute, all processed whilst "the system is executing four other transaction types". That works out to a bit under 1,400 transactions per second. If you ignore the price you can get up to just over 68,000 tps. This means that if we take the cheapest option, eNaTIS is still only at 0.86% of the benchmark performance.**”** [10]

However, by May 2008, eNaTIS was handling double the number of transactions

as the previous NATIS system [69].

eNaTIS has since been optimised and is performing better than at its launch. The project's initial launch was deemed a failure as the system was down for a long time because of the concurrent load on it. This load test had not been done properly as part of the testing phase [28]. The project as a whole is not a complete failure, however its launch could have been implemented in a better fashion. In January 2009, eNaTIS recorded it strongest performance to date of 16,167,279 transactions in a month [29].

The department is aware of the illegal sale of driver test booking slots and that they believe the eNaTIS system will help root out corruption and increase efficiencies. Users have however indicated difficulty in getting a booking slot via the system, which in the author's opinion indicates the possibility of corruption still.

“Despite complaints over a two-year period that the system was ineffective and dysfunctional – the Transport Department maintains the centralisation of the learner booking system is working very well and continues to eliminate the illegal sale of booking slots by corrupt officials.” [21,74]

2.5.1.4 Standards and Open Source Software

In the authors opinion, standards are important for the long term success of the governments e-Government initiatives. It will facilitate integration between the various information systems of government. It will also provide a minimum base technology stack, with which users can be sure of accessing and utilizing e-Government services. From the research, policy-making regarding technologies in

e-Government is important for the long term success of e-Government.

2.5.1.4.1 Minimum Interoperability Standards (MIOS) for Information Systems in Government

The South African government SITA agency has published a policy called the Minimum interoperability standards (MIOS) for IS in South Africa [29]. It defines the minimum standards that an IT system in government must meet. The aim of this policy is to ensure interoperability between government systems is maintained. One of the proposed technologies in the MIOS is Open-source software (OSS), and this is briefly touched on.

2.5.1.4.2 Open Standards

The use of proprietary standards is avoided, in favour of open standards. Open standards are specified and maintained by world standards bodies. These standards have usually have market support so there is little risk of the standard dying or being rarely used. They are also widely available to the public, and are widely implemented [50].

The use of open standards safeguards governments from being at the mercy of vendors. There is a risk that a data format will not be available should the supplying company become defunct. Also, vendors would command licensing prices which could be costly. Open standards also have the advantage that anybody can access the committee documents, drafts and completed standards free of charge or with a minimal fee. By being freely available, it will make the standards become widely used [49].

2.5.1.5 ICT in Rural South Africa

South Africa is a country where there is a distinct first-world and third world category of people. The wealthy elite people are highly mobile, affluent, educated and live mainly in the urban areas. The poorer and historically disadvantaged people are found in the the rural areas, living below the bread line. They live in locations where telecommunications is a luxury. The money used to pay for these services has to be weighed up against paying for their next meal.

The Accelerated and Shared Growth Initiative of South Africa (ASGISA) was initiated in 2006 to promote economic growth in SA to 6%. Reduction of Telecommunications cost was identified as a necessary requirement for greater accessibility to ICT's and greater economic growth [17].

This is a government driven initiative that is undertaken by various departments in government. The Telecommunications Act 103 was put together to foster universal and affordable telecommunication access. The Access Agency of South Africa is mandated to roll out universal ICT services in rural areas of South Africa. A study was conducted by infoDev [17] in rural communities in South Africa.

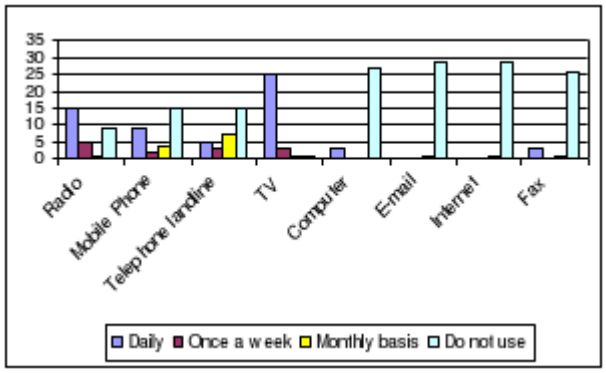

Figure 2.2: Frequency of Use of ICT type [17]

Figure 2.2 illustrates the frequency of use of an ICT type in the rural area of Kannaland Local Municipality (KM) which is a rural area in the Western Cape. Radios, mobile phones, land telephones, and TVs were used frequently, while computers, email, internet and fax were seldom used. The most common reason for this is the high costs of the service.

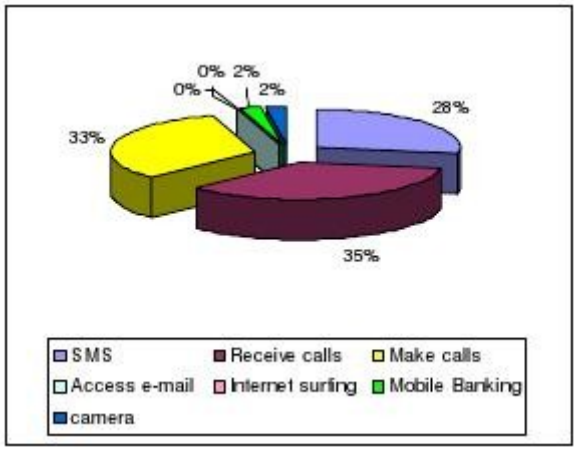

Figure 2.3: Types of Usage of Mobile phones in the Kopanang district [17]

Figure 2.3 Illustrates the usage of mobile phones in the Kopanang districts. The majority of its use is to receive and make calls. SMS is the third most used service. Mobile Banking indicates a significantly interesting part of usage as this indicates some possibility that users would be able to migrate to an internet service if possible. Email access, and internet services are not used, which indicates either a lack of knowledge or perceived usefulness of the technology itself [17].

It is envisaged that a lot of marketing and education would be required to make people more keen on internet usage, as well as a reduction in the overall usage cost. Since the basic means of access of e-Government is stipulated as web access,

it is a high priority that mobile phones users know that they have this means of accessing the internet. The cost of the internet also needs to be explained to subscribers as well, and may be prohibitively expensive for certain users.

One may consider the WAP to be the easiest means of delivering the internet to the people. It is not unreasonable to believe that the majority of the users in this area may be using cheaper prepaid phones, which are at the lower end of the mobile phone feature spectrum. This means that some of them have the most basic functionality which may not include internet access.

The 2% usage of mobile banking warrants attention because this is achieved by using a technology called WIG (Wireless Internet Gateway). These are applications that are stored on the user's SIM card, and are independent of the type of phone, and make use of the phone's SMS facilities. Transactions with the bank are secure encrypted transactions. Its not hard to conceive that if the government so mandated, they could have their web-portal being accessible via this means. The application is a text-menu based which would be useful for obtaining government information and even financial transactions, due to its secure nature [35].

This report now investigates the state of e-Government in some other countries.

2.5.2 United Kingdom

The UK government was regarded as a top-ranked implementer of e-Government, and the government had resolved to make all its services e-enabled by 2005 where possible, with a 50% uptake by March 2006 [59]. In 2005 and 2008 UK was rated 4th and 10th in the world in terms of e-Government readiness index [19,20]. In the

author's opinion, the UK is in stage 3 of the ANAO Model.

A study was performed by Damodaron et al on UK e-Government [59] , and the findings are discussed below.

> "The key benefits which are expected to be achieved as a result of the electronic delivery of services are:
>
> •Wider participation/reduced social exclusion;
> •Improvements in information-sharing between services and agencies;
> •Greater variety, choice and convenience of access for customers;
> •Improved speed and efficiency of the processes which underpin services."[59]

The UK's e-Government strategy maintains that e-Government implementation at a local level is critical to its success. This will increase enthusiasm in government interactions and transform local services. More than a billion pounds is being invested into broadband technology, however only 50% of homes have access to it[59]. Other means of access such as interactive digital television is being introduced which allows public access to a wide range of internet-based services. This alternative channel will allow people without PC's to access the system, and the prevalence of television is much higher than PCs.

2.5.2.1 Monitoring progress

To monitor the progress of local government implementations, each authority in England has to record its plans and the performance in a document entitled

"Implementing Electronic Government" (IEG) . Information gathered from this and user surveys help gauge the gap remaining toward reaching the target. While there has been progress in the implementation of e-Government, the uptake in e-Government has been low (1 in 10) versus places like Canada where it is 50%. The author believes there may be political disinterest or apathy in government which needs to be addressed, which is more a socio-political issue rather than a technology problem.

A research survey was carried out to find out more about the e-Government strategy. The following findings were made:

2.5.2.2 Perception of Staff

Staff found that the e-Government implementation helped them provide a better service. They were unsure of the scope and how well it will help to increase the current service level. Local councillors also lacked awareness of e-Government and its goals, which could be detrimental in the long term, as they need to drive the policies that increased its uptake.

2.5.2.3 Availability and Quality of information on e-Government/e-Democracy.

Respondents stated that they where irritated with the large quantity of information they received about e-Government. One respondent stated that the completion of the IEG does not address the transformation required by the local government. The theme is that there is too much information and too little skilful guidance.

2.5.2.4 Skill and knowledge gaps

Skill and knowledge gaps lead to certain councillor's not knowing what the positive outcomes of the e-Government initiatives are. They blamed this lack of knowledge for them falling behind in the IEG. The need for training was highlighted as a requirement by most of the local authorities.

2.5.2.5 Engagement with citizens

The current strategy is to use electronic means of communications with citizens. It was shown that current projects did not follow these principles. Even though communication with the citizens is considered very important, very few people had provided feedback on their requirements when consulted.

Respondents also stated that the IEG was considered unsuitable for the evaluation of customer satisfaction, and user surveys should rather be used. Current methods use quantitative methods such as web site hit-count, which may not accurately reflect customer perception of the service from a qualitative point of view.

2.5.2.6 Limit of penetration of e-Government

A rural parish was chosen as one side of the spectrum of local administration. They did not use internet for conducting their business. They met as a council once every two years, so one could question the suitability for their purposes. This

would be more of a burden than a help to them for their daily operations. However they may have benefited in their operations from information such as government subsidies.

2.5.2.7 e-Government Interoperability Framework (e-GIF)

The e-GIF framework is a mandatory framework that has been put into law in the UK. It states that government departments as well as suppliers need to comply with the specifications of the e-GIF policy document.

It consists of the technical specifications as well as policies that need to be met in all government projects. Included in the framework are high-level policy statements, technical policies and management, implementation and compliance regimes.

According to the e-GIF policy above, alignment with the internet is important, as the web-browser is the most ubiquitous form of interaction with the internet. Most computer users have a web browser installed on their computers, and this doesn't require maintenance. This puts an emphasis on having a good infrastructure for internet access including the availability of terminals to use [23].

From a software technology point of view, the use of XML Schemas inherently allows for ongoing extensibility. The format is also an open W3C standard. XML Schemas define how the data of the XML document is structured. It has the added benefit of extensibility, where one schema can extend or inherit from another schema. With the probability of changes to data models being good, this is a useful feature. The use of XML Schema's allow system developers to generate source code directly from the Schema, further enhancing and maintaining the

consistency of the software from e-Government software developers [23,45].

Another standard developed for the UK e-Government initiative is the e-Government Metadata Standard (e-GMS). This specifies the standard for the addition of meta-data to government information systems. e-GMS will provide for better archiving and indexing of documents which will aid in online searches for documents and information [23,46].

The e-GIF is mandated through the public sector forcing the relevant bodies to become compliant in this. Having a policy framework as part of legislation will also help align e-Government projects and bring a synergy to it. In the e-GIF framework for example, government projects will only have the money released upon sign-off of e-GIF compliance. Existing projects will need to provide a strategy for becoming e-GIF compliant. The incentive to become compliant will lead to greater and more widespread adoption. The resulting benefit of this will be derived later on when there is G2G integration. The technical standards are freely and openly available to public and to stakeholders working with the government.

2.5.2.7.1 Drivers behind e-GIF [23]

E-GIF has been designed to support the following drivers:

“ • interoperability – only specifications that are relevant to systems’ interconnectivity, data integration, e-services access and content management meta-data are specified
- market support – the specifications selected are widely supported by the market, and are likely to reduce the cost and risk of government information systems
- scalability – specifications selected have the capacity to be scaled to

satisfy changed demands made on the system, such as changes in data volumes, number of transactions or number of users

- openness – the specifications are documented and available to the public
- international standards – preference will be given to standards with the broadest remit, so appropriate international standards will take preference over EU standards, and EU standards will take preference over UK standards. “ [23]

The above drivers ensure that the uptake of e-GIF is acceptable by all stakeholders. Interoperability is beneficial to boosting compliance as well as competitiveness from bidders for government work. Risk is also reduced as the specifications are widely supported. The chances of a system being locked into a proprietary protocol is removed. Scalability is important as many government systems have to deal with large quantities of transactions, due to the size of most populations being in the order of millions [23].

2.5.3 Slovakia

After its break-away from Czechoslovakia, Slovakia underwent 4 years with no direction in terms of e-Government, but thereafter embraced e-Government [56]. The current e-Government solution is at a stage 2 of the ANAO model where information is published online with less interactivity. A few of their web-sites do allow participation in poll and provide downloadable application forms. One of their websites allows personalisation and supports localisation, which is the rendering of the page in the language of the users choice [24].

The e-Government plan for the country is given in the publication "Strategy and

Action Plan for Building an Information Society in the Slovak Republic", which was approved by the government of the Slovak Republic on January 21, 2004.

It identifies a number of activities like identifying the initial conditions and the main pillars of the information society in Slovakia. Creation of an institutional framework for a dynamic development of the informational society as well as periodically updating the action plan corresponding to the strategy. According to the 2010 UN Survey [61], Slovakia's world e-government ranking was 43.

> "The main objectives of the strategy are to create favourable conditions for:
>
> - Coordinated, conceptual and effective expenditure of public finances appropriated for the development of an information society,
> - Sustained development of the knowledge base, skills and competitiveness of population,
> - Sustained development of administrative capacities in the public sector,
> - Implementation of transparent and corruption-free public administration" [61]
> -

These strategy points are important and underline the need for a corruption-free transparent government. Continuous development of the administration as well as the citizens of the country are also suggested.

Financial aid from the EU acted as an enabler for the implementation of e-services. One factor that caused the delay in the implementation of the strategy

was that a key e-Government policy making position was not filled for a while. This caused a delay in the implementation of strategies from the Action Plan.

Another problem was that a common vision of the Information Society which is shared by key stakeholders at regional and local level did not exist. An IT Champion to promote e-Government did not exist until 2005. It has been shown that this is important for the success of e-Government [47]. Public-private partnerships where there is co-operation between NGO's, government and private companies did not exist. Public servants were not adequately trained with e-skills, and hence did not understand the positive benefits of e-Government.

2.5.3.1 General Issues

2.5.3.1.1 Digital Literacy

The Digital Literacy Index (DLI) was used to evaluate the digital literacy levels of Slovakia's citizens. In 2011, Slovakia's Digital Literacy rate has remain slightly above the EU average [56]. It showed that between 2009 and 2011, the digital literacy levels hadn't changed. In comparison to 2009, the population's ability to use software and hardware did not change, however there was an increase in the use of tablets, laptops and smartphones due the interest in mobile devices.

2.5.3.1.2 Willingness to learn

Figure 2 illustrates the share of the Slovakian population's willingness to learn ICT.

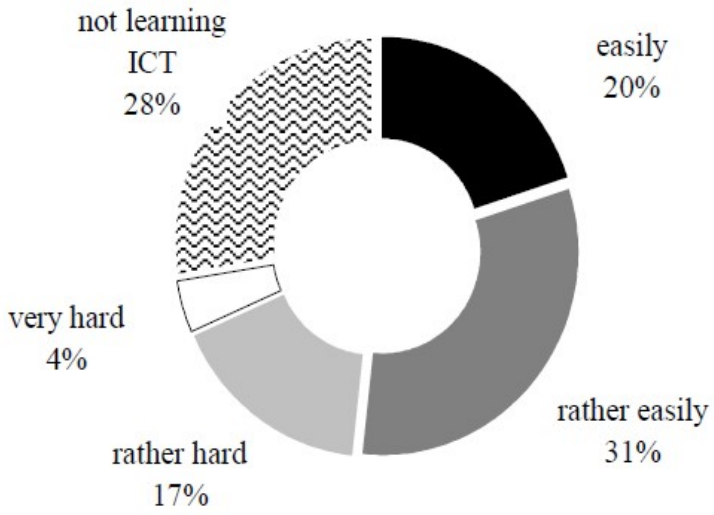

Figure 2.4 Share of digitally literate and digitally illiteratepopulation in Slovakia – 2011 [56]

As can be seen, there is a 28% section of the population that refuse to learn ICT. This group is a barrier to the spread of ICT and e-government services. The use of text messages and multi-media messages decreased while the use of social networking is on the increase. Adapting to ICT is dependent on the age, education and social status, type of household and related economic activities. [56]

The age group of the population was a significant factor in the populations group to adapt to new technology. While 90 % of those from the group aged 14 to 17 adapt easily, only 6 % from the group aged 60 and above adapt without

problems.

In a similar fashion, the population's ability to adapt drops dramatically with decreasing level of education. While among those university-educated 83 % adapt easily, only 34 % claim the same from the group with basic level of education. Significant differences occur also depending on the type and social status of the household. E.g. households of younger people and those with higher financial status adapt much better than others"

Risk groups were identified:

- people over the age of 55 years old
- people with basic levels of education
- unemployed
- pensioners
- financially poor or poor householders
- households of old people

2.5.3.1.3 Digital Divide

Slovakia's society is showing characteristics of a digital divide [56]. There a a group of younger, more educated people who have access to ICT and have an improved DLI while there is another group without such access or skills. This gap between the two has increased. The more progressive part of the society is younger, better educated and lives in the urban areas. The other group of people are older, less educated, economically inactive, with lower qualification.

There are gaps in e-Government services between cities and rural areas. Only 33 percent of municipalities have broadband access [66]. Most government

relationships are between government and business rather than between government and citizen, emphasis is required by government to include citizens more in the government.

The research report [56] postulates that one of the reason for this digital divide is that the state focuses on supporting digital education within the official educational system. Improving the digital literacy of people who did not go through these institutions has left to the NGO's.

2.5.4 Brazil

Brazil is a third world country with an estimated population of 185 227 660 in 26 states [33]. It's government is organised in a a federal structure. The e-Government programme was conceived by government in 2000, which led to the formation of the Work Group in Information Technology (GTTI). It was responsible for the determination of policy towards the use of ICT to interact with government. In the 2010 UN Survey [61], Brazil's world ranking is 61. Brazil is in Stage 3 of the ANAO model.

The work of this group coincided with the Sociedade da Informação programme. The green paper “Livro Verde” [57] which was derived from from this program indicates steps that need to be carried out to strengthen the economy through the use of ICT. It also indicated how to increase expansion of ICT to the citizens of Brazil. The actions were meant to connect the government to the business sector and the scientific and technology sectors [32] .

Brazil had over 100 million fixed and mobile subscribers n 2004. Nearly 10% of householders have access to the internet from their homes. The Brazilian government's website (http://www.e.gov.br) offers over 800 on-line services.

Like South Africa, Brazil has implemented an online tax filing system. There is also an online tender system (receita.fazenda.gov.br) which is used by private individuals and corporates. More than a 1000 government departments are using this system [32].

Brazil is the first country to have a fully electronic voting system (eVoting). This was used in the 1996 elections, where there were 406000 voting points and 115 million voters. The machine for voting is called a Direct Recording Electronic (DRE) voting machine. The voting machine allows for multiple forms of voting. It usually is a touch screen device with an electronic ballot. It can also use assistive technologies which allows handicapped voters to vote with anonymity. The advantage of this system is that the ballot counting is much faster than the manual process [33].

2.5.4.1 Interoperability specifications

To improve interoperability between government departments in Brazil, the e-PING project was created. It defines the data models and patterns for different entities share data which each other in real-time. It sets the policies to be used similarly to the e-GIF and Minimum Interoperability Standards (MIOS) of the UK and South Africa respectively.

The Integration and Intelligence System in Government Information (i3-Gov) is a

project which will allow allow the interconnection of data, systems and processes from 8 structures of the government. The information will be transported using the e-PING specification [33]. The e-PING specification is under constant review and has been recognized that it needs to be aligned with the e-GIF standard and other open standards [34].

The development of human resources is important as well. The government has developed a virtual school to train personnel on use of the Integrated System for Administration of General Services (SIASG). This system is used to manage functions including materials management, administrative communications and procurements and contracts government systems.

There is also another course called “Introduction to IT Management” developed to help qualify civil servants in using e-Government systems. This is an important step towards successful use of the e-Government by government workers.

The ICP-Brazil project provides a set of techniques and procedures with regards to digital certification to be used by government organisations [32].

2.5.4.2 Challenges

Technology is a challenge for the Brazilian e-Government implementation, as the government is highly federated and the system and network design needs to accommodate this [32].

The second problem is a socio-economic one, similar to South Africa. There is an initiative towards digital inclusion. This includes the use of kiosks, reduction of internet connection fees, public training in elementary schools and recycling of

computers. Open Source software is also promoted quite extensively. Brazil is one of the world's leading users of open-source software (OSS) [32,34].

2.6 General Obstacles to e-Government

e-Government has had many failures as well as successful implementations. A study of the failures and successes of other countries should help South Africa move towards a successful e-Government implementation.

The next section describes the obstacles that an e-Government application may face during its lifetime. These obstacles were commonly found in several countries around the world and some were more specific to the South African context.

2.6.1 Hard-soft gaps

People are central to the usage of e-government systems. People using the technology need to buy into the technology. It is important that training of the users on the technology occurs. Also, change needs to be managed, as people are being introduced to a change in the way they interact with government. The human factors have to be taken into consideration when promoting a new e-Government technology. Especially among the impoverished communities, where the levels of education are generally low, consideration of the human factor is very important for allowing a technology to be introduced and accepted. Madon states in his paper on the evaluation of e-government initiatives:

> “ Hard-Soft gaps are arguably one of the most commonly cited examples of e-Government failure in developing countries. An interpretive set of case studies concerning e-Government projects in Kerala, India, has revealed that the numerous factors which allow individuals in developing

countries to access the services effectively are ignored. These factors depend on resources, skill-levels, values, beliefs and motivations of those involved in the project [62]. From this we can stipulate that a lack of training, skills and change management efforts all would affect the rates of failure, as this would create a wide gap between the technology and the context in which it exists." [4]

2.6.2 Security

The systems need to be secure against hackers and attacks on the system. Unauthorised access and dissemination of information in the system must not be possible as it is important for the user to gain trust in the system to increase its usage.

In the eNaTIS project, the Audit General's report made a finding that certain users of the system have too many roles. There is talk of rolling out the eNaTIS system into the SADC group of countries but fears have been voice around security concerns. [65]

2.6.3 Privacy

Access to private information shared by the citizen needs to be controlled and guarded. For maintaining user trust and preventing fraud in the system, the users need to feel secure when sharing their personal information.

2.6.4 Economic Disparities

In countries where there is a large economic disparity between the rich and the poor, it is difficult to make e-Government completely effective. Usually, the poorer people are the ones requiring the most interaction with the government, in terms of services required, yet these are the people with the least access to an e-Government communications channel. Usage of e-Government varies greatly between different income groups. As can be seen in the Slovakian context, more well-educated, economically active people where willing to adapt to new technology, while others where more resistant to it. Social and economic status played a part in participation in e-government there. [56] South Africa is a mix of a first-world and third world country, with a large gap between the rich and the poor, which will impact negatively on e-government take-up. [2]

2.6.5 Digital Divide

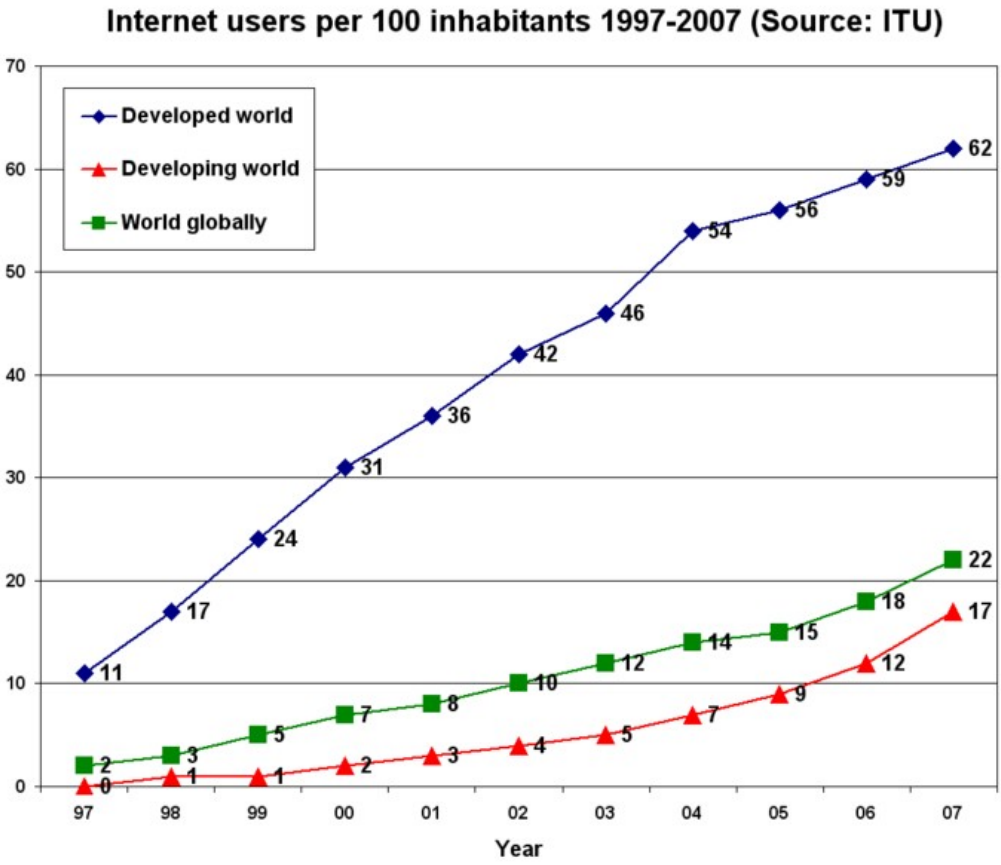

Figure 2.5: Digital Divide of the World for different countries [53]

Disparities in access to basic internet and telecommunications services affect the ability of e-Government to reach all the citizens of a country. This is particularly true in South Africa. With only 10% of the population having access to internet services and 15% of the population having access to telecommunication. [53]

2.6.6 Education

Educated people are the most likely to use an internet system, with levels of internet usage being proportional to their income bracket. An education in technology is important in bridging the gap. It has been shown that people with little or no education are less interested in using internet services. [2]

2.6.7 Accessibility

Accessibility involves allowing disabled people to be able to use a system. Government's need to make sure their sites are accessible to the disabled people also, otherwise this would lead to dis-enfranchisement of certain citizens. [2]

2.6.8 Prioritization

e-Government cannot be a higher priority than other basic services like food, housing, water and sanitation. Government's need the weigh up the immediate needs of its citizens, where some people can end up enjoying easy access to government transactions, while other are without basic needs. [2]

2.6.9 Citizen awareness and confidence

It is important to make the citizens aware of government initiatives from an early stage. People also need to become confident in the information services

provided by e-Government. [2]

2.6.10 Resistance to e-Government

e-Government makes carrying out fraud more difficult. Corrupt government officials make extra money from bribes. These people will resist and possibly sabotage attempts to put in e-Government systems. An example of this is the licensing department system that was put into operation, where one station refused to co-operate.

“Applying IT to licence bookings is paying off – when and where officials co-operate and do not sabotage the system, says ex-Gauteng premier Mbazima Shilowa.” [14]

While having the system in place may reduce the likelihood of corruption, there are other mechanisms that corrupt officials would use to elicit bribes from citizens. E-government shouldn't be thought of as the “silver bullet” that will eradicate corruption, however it would make carrying out corrupt activities more difficult.

2.6.11 Government/Vendor Trust

There is a lack of trust that has grown between South African IT vendors and the government. This is probably as a result of failed projects that have occurred in the IT sector.

> “However, one area that is raising considerable concern among government representatives is its relationships with and management of local ICT vendors commissioned to deliver on public sector projects. Included in the DPSA's draft policy is the comment: “Currently,

unscrupulous ICT vendors claim to be developing appropriate e-Government skills in every ICT-related contract awarded by government, but the status quo report proves otherwise." Its public service IT policy framework - "Electronic Government: The Digital Future" - says: "Unscrupulous IT vendors have a tendency to manipulate the government's legitimate quest for interoperability as an opportunity to dominate government IT infrastructure by touting 'architecture' and 'standards', which are carefully calculated to push competitors out of the race." [15]

2.7 Recent Trends in e-government

According to the United Nations e-government survey of 2010 [61], there have been significant trends in e-government globally.

2.7.1 Crisis Response Websites

Due to the financial crisis of 2008, governments have set up sites for the public to monitor the spending of stimulus packages and funds committed to the economic crisis. Citizens want transparency from government in order to see that allocated funds are being spent correctly.

Many countries are using map-based tools for citizens to view the amount of money allocated by government in certain areas. Here we can see that e-government is being used as a tool to support accountability.

2.7.2 Web 2.0

Social networking has increased in the world [61]. Sites such as Facebook

and Twitter have become popular. A governor in California used his twitter account to get the opinions of citizens on his policies. A website was created to aggregate all the results and users could vote on what they considered the best solution. The idea of government interacting directly with citizens will lead to greater participation by citizens in government .

2.7.3 Open Data

The US government has launched the website http://www.data.gov. This website publishes data catalogs from several agencies with statistical information. Citizens or private sector business can freely download this information for usage, with the aim of innovation coming from their use.

The World Bank (http://data.worldbank.org/data-catalog) also publishes a similar catalog of research data. The economic viability of providing this information still needs to be determined.

[61]

2.7.4 E-Participation

Governments like Singapore and China have set up websites for citizens to provide commentary on public policies and issues. Singapore has the REACH website (http://www.reach.gov.sg), which has discussion forums initiated by government and by citizens. Two thirds of the discussions are initiated by citizens.

China also has a similar web portal (http://english.gov.cn/), where citizens can comment and provide feedback on policies. A premier has had an online chat with citizens to gather ideas from them. The portal is also used by the State Bureau of Anti-Corruption, to gather information on

corruption investigations.

2.8 Summary

An evaluation of the literature in the field of e-Government has been provided. An introduction into the subject of e-Government was given with a definition. E-democracy was discussed as one of the potential goals of e-Government.

Different models of e-Government are discussed, and the stages of each model. The technology acceptance model (TAM) was discussed, as this would be evaluated for current e-Government implementations as part of the research survey.

A review of current e-Government implementations was discussed. UK's e-Government implementation was discussed and the positive & negative aspects were discussed. The E-GIF framework was discussed, as this was used as a reference for South Africa's MIOS. The e-Government implementation in Slovakia, South Africa and Brazil were discussed. The frameworks and experience of Brazil and Slovakia were also discussed.

A summary of research into ICT in South Africa was given. This indicated the extent to which technology is used is poorer rural areas in South Africa. WIG and WAP technology were introduced as possible candidates for spreading technology to the people. Recent developments in e-government were briefly discussed.
A summary of the general and most common obstacles to e-Government was also presented. These are obstacles that the author believes are most likely to be encountered in the South African context.

Chapter 3 : PROCEDURE FOR EVALUATION OF CURRENT IMPLEMENTATIONS IN SOUTH AFRICA

From the literature review in the previous chapter, it will be seen that there have been many attempts by government institutions to implement e-Government. Implemented solutions have had mixed outcomes, with varying degrees of success and acceptance. New projects are also in the development phase and have not been implemented as yet. Citizens need to be coerced into using e-Government services.

The Technology Acceptance Model (TAM) provides a theoretical framework which can be used to assess whether a technology has a high probability of actual use from its attributes of Perceived Usefulness (PU) & Perceived Ease of Use(PEOU) [16] . If the usage rate of a system is low, then an implementor can make adjustments to increase the system's levels of PEOU and PU and thereby increase the probability of its user's Intention to Use.

Further research shows that elements of trust and acceptance of new technology as well as several other factors are important in making e-Government projects successful [44].

To measure the acceptance of current e-Government implementations in South Africa, a survey was performed. The questionnaire that was used is the same used by Davis's research paper [16]. The reader is referred to Appendix C for the questionnaire used.

An evaluation of an e-Government solution using TAM can provide information on whether the system has the attributes to increase its acceptance and usage. There are other methodologies that may be employed, e.g. Theory of Planned Behaviour [67,] however the focus of this project will be on TAM due to time limitations. TAM purports that increasing perceived usefulness and perceived ease of use are the key drivers for acceptance and usage of an IT system. An important observation to make is that the eNaTIS and the SARS e-Filing systems could be deemed successful because of other reasons, and not only because they have the attributes of TAM. This is discussed in later sections.

Chapter 4 : RESEARCH METHOD

4.1 Research Design

To evaluate the potential success of e-Government applications using the TAM, the survey questionnaire that was used in Davis's Thesis [16] was used in a slightly modified form. The respondents were users of the applications in government. The first group were the users of the eNaTIS system. The second group were users were of the SARS e-Filing system. Even though ordinary citizens could be regarded as users of the system, respondents from various accounting firms that used SARS e-Filing were surveyed, since they used it much frequently (more than once a year that a citizen would).

The results would see if the characteristics of the TAM model are displayed, which would indicate the probability of success in the surveyed e-Government applications.

4.2 Questionnaire

Possible solutions to improve e-government usage were not elicited from the respondent as part of the survey questionnaire. However some respondents did volunteer their opinions on the subject of e-Government. The questionnaires were based on Davis's TAM research questions. The questions where grouped into three parts: Perceived Usefulness, Perceived Ease-of-use, and Intention to Use. The questionnaire and the results are shown in Appendix D and E respectively.

Each survey's data was analysed separately, first for eNaTIS and then the SARS e-

Filing.

It took a considerable amount of effort to get assistance from the government departments. The National Department of Transport (eNaTIS) was the one government department that agreed to the survey, and this was a small sample set of around 11 people. SARS was approached but could not assist in performing the similar survey. Eventually, it was decided that tax-practitioners who use the application on a daily basis should be surveyed, as they were also first-hand users of the system.

During the analysis of the results, a score was allocated to each result, with “disagree” being the lowest (1) and “strongly agree” being the highest (5). The rounded average score for each question was calculated. Since the original sample data from Davis's TAM research was not available, a quantitative comparison was not possible, hence a qualitative comparison was performed with the results. If the driving factors from the TAM were confirmed, the probability that project would be successful would be good.

4.3 Limitations

- The sample set of the surveys is too small to make the results significant to the broader population.
- There are many other e-Government applications that are in existence, but only SARS and eNaTIS where selected for the interview surveys.
- New e-Government applications that are in progress where not surveyed.
- The proof-of-concept is basic, and not a fully-fledged application.
- The research on relevant technology was conducted through a literature

review; no practical evaluation of these technologies was made.

4.4 Summary

The research methodology used was thus described. It was indicated that the sample size was too small to be significantly applicable to a larger survey population.

Chapter 5 : ANALYSIS and DISCUSSION OF RESULTS

5.1 eNaTIS

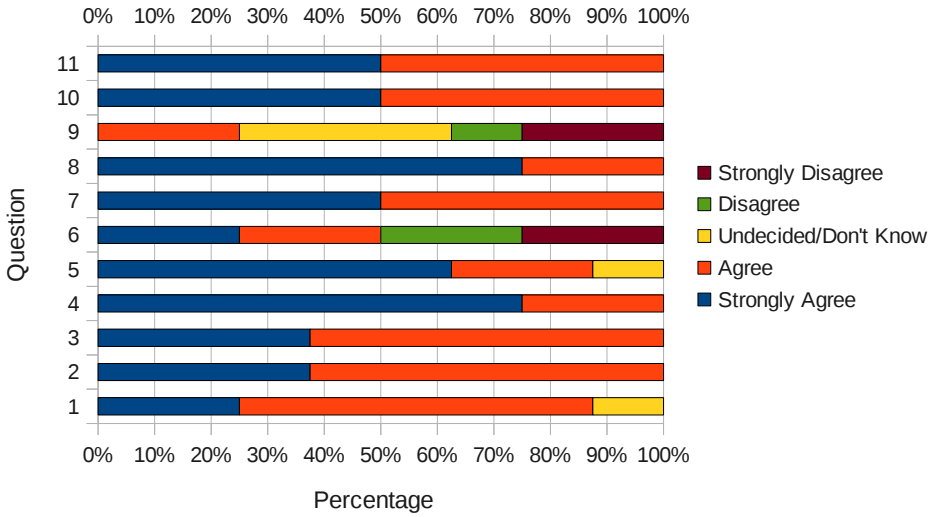

Figure 5.5: Results of eNaTIS Survey

Figure 1 illustrates the results of the survey for the eNaTIS application. There were 8 respondents. For the purpose of this discussion “Strongly Agree” and “Agree” are counted as Agree and “Disagree” and “Somewhat Disagree” are counted together as Disagree.

The eNaTIS project is the traffic departments application for motor vehicle registration and licensing. The respondents that answered the survey used the system on a daily basis.

5.1.1 Perceived usefulness

73% of the respondents either agreed that using eNaTIS improved their performance on the job while 12% did not know .

100% of respondents said that using eNaTIS in their job would increase their productivity.

100% of respondents said that using eNaTIS in their job would increase their effectiveness in their job.

100% of respondents found using eNaTIS to be useful in their job.

It can be seen that the eNaTIS system is perceived by its users to be useful in their job. It is possible that the users used a more manual system before, hence finding it more useful. The system also has some productivity and efficiency inherent in it.

5.1.2 Perceived ease of use

90% agreed that eNaTIS is clear and understandable. 10% were not sure. However, 50% of respondents found that eNaTIS requires a lot of mental effort, while 50% thought the opposite. This is contradictory as one would think that the if the system is clear and understandable, it would require less mental effort to use.

50% agreed and 50% strongly agreed that eNaTIS is easy to use. This is opposite to the previous result. It is probably due to the users becoming familiar with the system, while the previous question may indicate that the user needs to pay full

attention to task he is working on while using the system. Probably the potential for making an error is high.

75% and 25% of respondents strongly agreed and agreed respectively that they find it easy to get do what they want it to do. The PEOU of the system seems high from these results, except for the question of mental effort. The amount of mental effort required is also a subjective concept. It may depend on the capability of the users of the system, or it could be that the system itself is the problem. An experienced user may find the mental effort less, and at the time of the survey, the system was about a year in operation.

The concept of having their application work in their preferred language is probably new to the users, as most applications is South Africa are written in English. The average score for this question is undecided. Users have probably not thought of the idea that the system could have been presented in a user's preferred language rather than in English only. The one issue with multi-language support is that the cost of developing the software is higher. The benefits of having this and its impact on technology acceptance needs to be studied further, as having a computer system in the user's native language wouldn't necessarily make the system easy to use. Also, in South Africa the costs of internationalizing the application to 11 languages should be high. This is a subject for another study.

The Intention to Use (ITU) questions indicate that the users would use the system if they had access to it. According to TAM, this is driven by the EOU and the PEOU that the system display. All of the users users agreed and strongly agreed on their Intention to Use (ITU) the system if it was available to them.

There is generally a positive outlook for eNaTIS in terms of the PU, PEOU, and

ITU sections. The perceived usefulness and ease of use is high, and the intention to use is high. From Davis's TAM model, it can be predicted that the system will be successful [16].

5.2 SARS e-Filing.

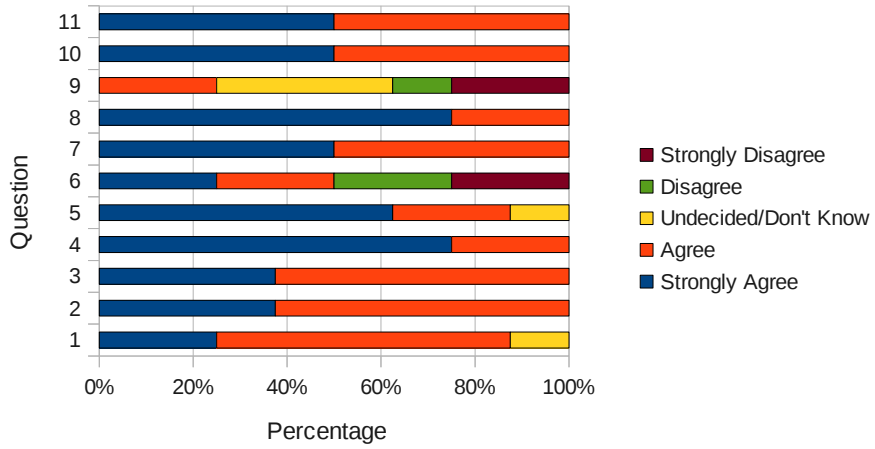

Figure 5.6: SARS Survey Results

Figure 2 graphs the results of the survey for the SARS e-Filing application. There were 11 respondents who where mainly tax-practitioners who were daily users of the SARS e-Filing system.

5.2.1 Perceived usefulness

All of the respondents either agreed or strongly agreed that using SARS e-Filing improved their performance on the job. All respondents said that using SARS e-Filing in their job would increase their productivity. All of respondents said that using SARS e-Filing in their job would increase their effectiveness in their job. The complete group of respondents found using SARS e-Filing to be useful in

their job.

It can be seen that the perceived usefulness of the SARS e-Filing is high. This is because it saves the user's time and effort by doing the returns online. Also, the forms are already pre-populated with the IRP5 information which saves the user from the effort of having to populate the forms manually. These IRP5s are submitted by employers which is already a requirement from the employers. This is a good example of the efficiency that is gained by the implementation of e-Government. There is less duplication of work and increased convenience. Previously the user would have to copy the values manually from the IRP5 document, now it is pre-populated in his on-line tax return.

5.2.2 Perceived ease of use

27% strongly agreed and 64% agreed that SARS e-Filing is clear and understandable. With 9% not sure. However, 72% of respondents found that SARS e-Filing requires a lot of mental effort, while 9% did not know and 18% disagreed. This could be attributed to the overall form being difficult to use or being not understandable. It could also be that the user had to be careful when entering figures onto the form for fear of human error.

100% strongly agreed that SARS e-Filing is easy to use. From the author's experience, this could be because the form has form-fields which make it easy to enter values in it, and navigation between each field is by using the tab key

63% agreed that they find it easy to get do what they want it to do while 27% where undecided and 9% dis-agree. This could be that there are problems using the forms.

The average score for using the home language is 3.18 (undecided/unknown). As mentioned before, this question needs to be researched in another project as there are too many variables that impact this. The spread of languages for the survey-takers is unknown, and there was no indication of whether their home language is English, as this is the language that the applications were written in. It hasn't been verified, but it could be that a lot of the users are English speaking hence the large number of agrees. A proper research study for this area would present the original English version and then the version in the home language of the respondent, from which a comparison could be drawn.

The ITU questions indicate that the users would use the system if they had access to it. All of the users agreed for both questions on the Intention to Use (ITU) questions. According to TAM, this is driven by the EOU and the PEOU that the system exhibits.

There is generally a larger group of people who view SARS e-Filing positively in terms of the PU, PEOU, and ITU sections. By the TAM model, this predicts that the currently implemented eNaTIS and SARS e-Filing governmental systems will be successful.

It is however not conclusive as the sample size is not large enough to draw a conclusion from. Also, the original results of Davis's research is not available for us to make a comparison with. [16].

5.3 Other technologies

From the literature review, technologies that are more available to users on mobile phones are WAP and WIG phones. More research needs to be carried out on the prevalence of these technologies. As WIG is SIM-card based and can be found on all Vodacom and MTN subscribers' phones, it is an option for rolling out a mobile-based e-Government solution. The one obstacle issue with these techniques is the cost of access and that not many people have WAP set up on their phones or their models are too old to have this technology.

5.4 Factors Influencing Success and Failure

With reference to the case studies in the literature reviews, gaps and barriers as well as positive factors relevant to South Africa's e-Government have been identified.

5.4.1 Positively Contributing Factors:

5.4.1.1 Unified high-level strategy for e-Government

South Africa, similar to countries like Brazil, UK and the Slovakia published a strategy at the highest level of government, putting together a strategy for e-Government implementation across all departments in government. The use of standards in the MIOS which can be likened to the e-GIF standard, is an advantage for the success in the long-term.

SITA's 2009-2010 strategy presentation seems to address this [39]. There

needs to be a long term strategy that will remain valid across different election terms.

5.4.1.2 e-Government Champion

There needs to be an e-Government champion within government. Dr. Fraser Moleketsi was a supporter of e-governance in her tenure as Minister of DPSA [38]. President Zuma has indicated that service delivery is important to the people. Even though he is not directly an e-Government champion specifically, he is nevertheless committed to service delivery. Having this political high-level support bodes well for the success of e-Government.

5.4.2 Impediments and Barriers

5.4.2.1 Telecommunications

There is a gap in terms of access and cost to telecommunications. South Africa 's telecommunications costs is one of the highest in the world. This will discourage citizens from attempting to use e-Government services more often. There are signs that the cost of bandwidth are decreasing which should lessen the barrier to entry to internet-based services [51].

South Africa's two-tier economy leads to the a very affluent rich working class, while a number of mostly previously disadvantaged communities are living below the bread-line. While telecommunication services are readily available in the wealthy areas, the poorer areas have poor or inadequate infrastructure. Those that do have telecommunications are burdened its

high costs, which is one of the highest when compared to the rest of the world. The most ubiquitous technology is mobile cellular (GSM) technology, penetration of which is more than 33million at the end of 2006. [13]

5.4.2.2 Corruption

Corruption is e-Government's constant enemy, as e-Government makes it difficult for corruption to occur. As in other parts of the world, corrupt officials are to be expected to derail or circumvent the systems put it place. Also, they may devise ways to use the systems fraudulently. In the author's opinion, it may be difficult to stamp it out completely, but it has to be managed by the implementers and its impact minimized.

5.4.2.3 Prioritisation

This is important as there are many pressing human needs like housing etc. e-Government needs to be seen as a supporting element for the delivery of services. If people aren't on record with the government systems, they may not get the service-delivery that they are entitled to. Having their identity documents in order to collect grants is one such example.

5.4.2.4 Geographic Sparseness

Another impediment to e-Government in South Africa, which is not mentioned in [2] is the geographic sparseness of its population. While

most of its population are in the cities, a lot of its people are located in remote rural areas, some often without basic telecommunications access. These places are often coupled with lower educational levels and and economic earning ability, which adversely affect the use of e-Government. In India, mobile trucks are used to take e-Government information systems to the most rural areas for the government's vaccination programme, with success. [6]

5.4.2.5 Security/Lack of Trust

Users are mostly new to technology especially in the rural or poorer areas. Having all of a user's personal data available from one location can make a user fearful of someone else getting access to that data. This is a valid fear as identity theft is increasing. Measures need to be taken to increase the level of trust, either through better password protection or the use of biometric technology. One common theme after discussion with a few people from the survey was the issue of security. Currently ID theft is a problem in South Africa. [52,53]

5.4.2.6 Lack of Skilled resources

As can be seen in the UK and Slovakia, lack of well-trained IT staff and users is an impediment. In South Africa, there is a lack of people with IT training, so people's skill-levels need to be lifted. There is little information available to the public on the training programmes undertaken for these systems, however it can be assumed that adequate training has taken place given the successes.

5.4.2.7 Socio-Economic Disparities

Due to the large gap between the rich and poor South African's, there will be resistance to e-government's uptake. As was seen in Slovakia, the more educated and economically active part of the population where prepared to adapt to new technologies while the opposite where not [56]. Other factors such as age groups, level of education, and geographical location played a role in their willingness to learn new technologies. In the author's opinion, government can not rely on the education system to increase the skill level of the citizen's. Programmes out of school need to be created to educate and raise the level of awareness of South Africans around e-government.

5.5 Critical Discussion of eNaTIS & SARS

The eNaTIS and SARS e-Filing projects are successful, however they target economically active citizens. They are necessary for the efficient governance of road and tax laws. However they don't address the need to uplift previously disadvantaged citizen's living conditions. While they are addressing service-delivery, they are focussing on a minority of South Africa's population.

5.5.1 eNaTIS

There is a mixture of success and failure with the eNaTIS system depending on who the stakeholder is. The various stakeholders in eNaTIS are the Department of Transport (DoT), citizen's, driving schools, Motor Vehicle Dealers and manufacturers.

For the DoT, Motor vehicle dealers and manufacturers, eNaTIS could be

considered successful[74], as the transaction rates have increased. However for driving schools and private citizens, finding a driving test booking is difficult. Corruption has been highlighted as the cause of this, and a number of convictions against corrupt officials has happened [21, 74]. There are also programmes such as the “Provincial e-NATIS Anti-Fraud and Corruption Summit” that the MEC Thandiswa Marawu opened, where ways to combat fraud on the eNaTIS system were discussed.

While eNaTIS is considered successful from the DoT point of view, this cannot only be attributed to a good TAM assessment, as this system is legislated for use by government and citizens are forced to use it. From the outcome of the survey, there was no negative feedback from its users at government departments.

5.5.2 SARS

While SARS e-Filing has a good TAM rating, there are other factors that played a role in the success of the the SARS e-Filing project. Marketing on a large scale has been undertaken. Also, a lot of training has been performed with the support structures such as the national call centre which supports users. On the flip side of the coin, it could be said that people were forced via legislation to use the system, as large penalties were implemented for late submissions, which would have driven the taxpayers intention to use and actual use high.

One of the reason's SARS e-Filing is a success is that SARS have trained the users adequately, and have set up training session for tax practitioners. [12]. As Heeks mentioned in his paper, the “Hard-soft” issues need to be looked at. People have to be trained as to the usage of the system. Change management needs to be in place, as people are being introduced to a totally new system. For the eNaTISs project, new business process flows where implemented, and training was

essential for them.

It is important for the reader to note that implementing an e-government solution is not only the implementation of an IT system, but also managing the people and resources that are affected by the system.

Chapter 6 : CONCLUSIONS and RECOMMENDATIONS

A restatement of the research questions:

- Why certain e-Government projects are successful and why some are failures?
- What are the suggested practices required to make an e-Government project successful?

From the results for eNaTIS and SARS e-Filing, users found that the application's PU and PEOU was high, and indicated their intention to use was high. From the surveyed group, everyone said that they would use the system if they had the opportunity. According to the principles of TAM, the probability of the user's intention to use the system will be high.

While the TAM points to high intention to use, there are other factors which can be attributed to the systems' actual usage. These include marketing, training, and the fact that legislation forces citizen's to use the system. Even with the good TAM evaluation, eNaTIS is plagued by corruption and needs to be addressed.

Even though the SARS e-Filing system is successful in its own right, cognisance must be taken of the fact that it serves a fraction of the economically active section of South African society. Those that have access to the internet are able to participate in this programme.

eNaTIS also has the same characteristic as SARS e-Filing. Research needs to be done into how e-Government can be used to improve the lives of the rest of South Africa's population that come from an economically disadvantaged background, a group which has little access to basic resources. eNaTIS has a mixture of success and failure; it is successful from the government's point of view, while for the the ordinary citizen, in certain cases it is not.

From the literature surveyed, it can be proposed that technologies like WIG and WAP which are mobile technologies should be promoted. This will allow e-Government services to penetrate remote areas with little communication infrastructure. A wider investigation into enabling technologies needs to be conducted as this was not possible within the time-lines of this research project. Government should look at introducing and increasing e-participation as was done in Singapore, China and other countries.

The usage of WAP will increase once the cost of data in South Africa decreases. Investigations of how and what services should be rolled out via this technology should be made. In the author's opinion, the government should subsidise access to this channel as well as other channels. This is because the cost of interacting with government will effectively decrease due to the increased efficiency. Also, the cost of bandwidth for the ordinary citizen needs to be reduced to levels comparable to the rest of the world.

In general, e-Government implementers in South Africa should be aware of the pitfalls discussed previously. Corruption, high telecommunication costs, security, skill-levels of users are factors that need to be managed in the South African

context. Also, the delivery ability of vendor's need to be assessed and managed.

There are many e-Government implementation projects on the go, which is a step in the right direction for South Africa. There are frameworks in place to support e-Government's implementation and adoption, which is a success factor.

Given the lessons from e-Government studies in other countries, and repeated in this report, South Africa can be encouraged that given the appropriate circumstances, e-Government could develop to really be of service to the country's citizens, irrespective of where they are located.

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APPENDICES

Appendix A: Method of analysis

A score was allocated to each result, with disagree being the lowest (1) and strongly agree being the highest (5). The rounded average score for each question was calculated for each question. Since we did not have the original sample data from Davis's TAM research, we would not be able to make a quantitative comparison, and a qualitative comparison was done of the results. If the driving factors from TAM were confirmed, we assume there's a good probability that the outcome is successful.

The sample sets were too small for the results to have any statistical significance.

Appendix B: Evaluation of user-experience

The users found the survey quick and easy to use. The eNaTIS survey took on average 10 minutes long, and there where no questions asked by the survey-takers regarding the questions themselves.

The SARS survey-takers also found the questionnaire easy to complete. This SARS survey was done at different times in groups of 1 up to 3 people at different tax-company offices.

Appendix C: Questionnaire

Below are the questions that make up the survey for the SARS and eNaTIS surveys. The actual questionnaire replaced the "<system>" with either SARS or eNaTIS.

A. Perceived Usefulness

Using <system> will improve my performance on my job.

Using <system> in my job will increase my productivity.

Using <system> will enhance my effectiveness in my job.

I find <system> would be useful in my job.

If I used <system> in my home language, it would be a lot easier to use.

B. Perceived Ease of Use

My interaction with <system> is clear and understandable.

Interacting with <system> will no require a lot of effort.

I find <system> will be easy to use.

I will find it easy to get <system> to do what I want it to do.

C. Intention to Use

Assuming I had access to <system> , I intend to use it.

Given that I had access to <system>, I predict that I would use it.

Appendix D: Survey Results

Question	Strongly Agree	Agree	Undecided / Don't Know	Disagree	Strongly Disagree	Rounded Average
1	25.00%	62.50%	12.50%	0.00%	0.00%	4
2	37.50%	62.50%	0.00%	0.00%	0.00%	4
3	37.50%	62.50%	0.00%	0.00%	0.00%	4
4	75.00%	25.00%	0.00%	0.00%	0.00%	5
5	62.50%	25.00%	12.50%	0.00%	0.00%	5
6	25.00%	25.00%	0.00%	25.00%	25.00%	3
7	50.00%	50.00%	0.00%	0.00%	0.00%	5
8	75.00%	25.00%	0.00%	0.00%	0.00%	5
9	0.00%	25.00%	37.50%	12.50%	25.00%	3
10	50.00%	50.00%	0.00%	0.00%	0.00%	5
11	50.00%	50.00%	0.00%	0.00%	0.00%	5

Table 2: eNaTIS Survey Results

Question	Strongly Agree	Agree	Undecided / Don't Know	Disagree	Strongly Disagree	Rounded Average
1	45.5%	54.5%	0.0%	0.0%	0.0%	4
2	45.5%	54.5%	0.0%	0.0%	0.0%	4
3	54.5%	45.5%	0.0%	0.0%	0.0%	5
4	27.3%	72.7%	0.0%	0.0%	0.0%	4
5	27.3%	63.6%	9.1%	0.0%	0.0%	4
6	9.1%	63.6%	9.1%	9.1%	9.1%	4
7	18.2%	81.8%	0.0%	0.0%	0.0%	4
8	18.2%	45.5%	27.3%	9.1%	0.0%	4
9	9.1%	45.5%	18.2%	9.1%	18.2%	3
10	27.3%	72.7%	0.0%	0.0%	0.0%	4
11	36.4%	63.6%	0.0%	0.0%	0.0%	4

Table 3: SARS e-Filing Survey