

E-Government Adoption in Developing Countries: The Case of South Africa

Willard Munyoka¹ and Mungofa Francis Manzira²

Department of Business Information Systems

University of Venda, P. Bag X5050,

Thohoyandou 0950, South Africa.

wmunyoka@gmail.com¹ and francis.manzira@univen.ac.za²

Abstract—The rapid proliferation and pervasiveness of information communication technology (ICT) across the world with its huge potential to transform government entities to become efficient, has witnessed huge e-Government (E-Gov) projects being undertaken by the South African government to strategically gear itself for the twenty first century. These ICT initiatives based on the internet and the World Wide Web (WWW) are intended to capacitate the government through digitization to respond well to its immense challenges namely: efficient public service delivery, efficient working, effective communication with its citizens and the business community, improve managerial effectiveness of public offices and promote democratic values and mechanisms. This paper focus on exploring the implementation of e-Gov initiatives taking place in three specific frontiers in South Africa: e-Administrative (G2G – Government-to-Government), e-Citizen (G2C – Government-to-Citizen) and e-Society (G2B – Government-to-Business) and give an analysis of the success and constrains of such endeavours. In this paper we extensively explore contemporary research undertaken in this field and explore the actual e-Government websites for in-depth comprehension of the developments. The study found that South Africa has made tremendous positive achievements in its e-Government endeavours to digitize the delivery of its services and all governance processes occurring at its various governmental levels. However, great concerted effort from all involved parties is required to overcome the considerable challenges being faced. In conclusion, e-Gov process requires a coherent strategy, commencing with an examination of the nation's political will, resources, regulatory environment, and the ability of the population to make use of planned technologies.

The study provides vital information and recommendations for policy makers for shaping the future of e-Gov in all government entities.

Keywords—e-Government; initiatives; adoption; ict; South Africa.

I. INTRODUCTION

The ICT for Development driving force has taken developing countries by storm, leaving them with great desire to adopt e-Gov in all their entities to realize efficient operations and quality services to its citizens and business world. This is especially so to the South African

government, where the digital divide between the rural and urban setups is the norm, rather than exception. Reference [8] stated that government services which have been impressed by rigid bureaucratic and recently by then ICT can be replaced with e-government to be more flexible, and more oriented to user satisfaction. The ICT revolution in the past decade has positively impacted the way the South African government has geared itself to respond to numerous challenges it is facing in-line with fulfilling the objective of providing efficient public services to its citizens and the business world. This has resulted in the adoption of a resounding electronic government strategies aimed at revitalizing services through provision of a twenty-four-hours-per-day-and-seven-days-per-week (24/7 service) access to information. Reference [7] stated that online forms of government are non-discriminatory, faceless and consistent. Furthermore, the author stated that online information would result in the affirmation of previously disadvantaged groups.

Given this background, this paper explores the major e-Gov initiatives implemented by the South African government, their success stories, challenges, and analysis of the achievements in-line with other developing countries in the African Continent and the world at large. The next section of the paper outlines the rationale for and goals of e-Gov in South Africa. This is then followed by detailed outline of the major e-Gov initiatives undertaken by the South African government and an analysis of constrains of the projects. The paper conclude by postulating recommendations for future directions to vertically and horizontally enhance e-Gov services to policy makers in South Africa and other developing countries facing the same digital-divide predicament.

II. RATIONAL AND GOALS FOR E-GOVERNMENT ADOPTION IN SOUTH AFRICA

Government work is very information intensive [2] and effective information flow is crucial for effective management of the government's routine business services to its citizens. Therefore, information constitutes a valuable national asset to the government. According to report by [2] and [3], information "provides the public with knowledge of

the government, society, and economy – past, present, and future. It is a means to ensure the accountability of government, to manage the government's operations, to maintain the healthy performance of the economy... The free flow of information between the government and the public is essential to a democratic society.”

In the context of South Africa, the goals of e-government adoption are to ensure that government activities are transparent; there is accountability, openness in public administration and regulations, and public services to its clients and other stakeholders like Non-Governmental Organization (NGO's). Over and above this, such initiatives should guarantee its democratic society quality and timely service delivery; and quality information. Information quality means putting management systems and controls in place to ensure that information is accurate, relevant, complete, economical, verifiable, accessible, simple, and secure. It is noteworthy that such quality information is captured and managed at minimal costs to ensure maximum use at affordable and sometimes no costs at all to citizens. According to [1], most developing countries in the world pursue almost similar e-Government objectives, varying slightly depending on their political, social and economic priorities and these are to improve access to and delivery of public services and information; to enhance transparency, openness of, and engagement with the administration; to increase productivity of businesses, citizens, and employees; to improve efficiency in the design and delivery of government services; and to contribute to broader government economic and social outcomes.

III. MAJOR E-GOVERNMENT INITIATIVES IN SOUTH AFRICA

The South African government has made tremendous efforts in ensuring that e-Government adoption is gradually implemented in all the three major e-Government types, namely e-Administrative, e-Citizen, and e-Society. According to information management principles for open government adoption, a prime factor for adoption is creating awareness among the stakeholders [4]. Outlined below are the prominent implemented e-Gov projects:

A. Batho Pele National Gateway Portal

This project was kick-started by the Department of Public Services and Administration (DPSA) in conjunction with the State Information and Technology Agency (SITA) in 2003/2005. This integrated one-stop-service e-Gov portal offers round-the-clock G2C services to its citizens via its government website: www.gov.za. This website has evolved from the initial emerging presence phase to current transactional phases and consented efforts are at very advanced stage to reach the networked presence phase – the most sophisticated level in the online government initiatives characterised by an integration of G2G, G2C and G2B (and reverse) transactions [5]. The South African Communications and Information Systems is mandated with

the task of content updated, language translation of the content to many languages used in South Africa and migrating the portal into the networked presence phase of e-Gov. The portal offers citizen-centric services categorized to, ‘Service for People’, ‘Services for Organizations’ and ‘Services for Foreign Nationals’ [6]. The portal offers the following key e-Gov services to citizens: access to all government departments, government documents, reports and forms; information on various acts, bills, draft bills, visa and passport applications; birth, death and marriage certificates; temporary and permanent residence permits, registering and deregistering as voter; and registering for unemployment insurance funds [6].

B. South African Revenue Services (SARS) e-Filing

E-Filing is one of the successes of e-Gov projects in South Africa initiated by SARS in 2001. The major goal of this G2C and G2B initiative is to facilitate electronic submission of tax returns and payments by taxpayers and tax practitioners, as well as extension use on collection of value added tax (VAT) [6]. Customers can electronically file their tax returns online and thus greatly avoid the traditional “back and mortar” long-winding queues at the SARS offices. The SARS e-Gov project realized its Return-on-Investment (ROI) in just two months of implementation. The SARS e-Gov system enjoys commendable success due to the following factors [6]:

Provision of clear step-by-step guidelines on its website on how to file tax applications and returns – offering real-time taxpayer information and online services at lower operational costs.

- Strong government support that enforces zero-tolerance approach to corruption in the SARS electronic operations – thus resulting in the realization of billions of tax revenue.

C. Cape e-Government Strategy

The Cape Online Strategy is a state-of-the-art service-driven and citizen-centric e-Gov brain child of the Western Cape Province of South Africa commissioned in 2003. The main goal of the Cape e-Gov Strategy is to improve the internal efficiency of the Provincial Administration and service delivery to the community. This is supported in [8] stating that e-government allows the public service to be more efficient since the service should not be conducted by face-to-face communication. It offers three key major services:

- Digital delivery – this is intended at offering efficient and effective digital service delivery and updated online information to both individuals and businesses that deals with the government.
- Digital democracy – this is an e-Gov strategy to incorporate great accountability, transparency and legitimacy in the operations of the local government. In the local context of Cape e-Gov, it entails posting of government tenders, reports and crucial biddings over the internet.

- Digital development – this is an endeavor to promote public access of the e-Gov, progress citizen ICT skills and advance regional ICT.

Accessed through www.westerncape.gov.za”, the portal is amongst the widely accessed e-citizen online service in South Africa.

D. Other Major Notable e-Government Projects

E-Justice System and e-National Traffic Information System (e-Natis) are the other noticeable e-Gov initiatives undertaken by the South African government. The e-Justice System seeks to transform the justice administration system from a manual to an automated system [7]. This will be made possible by the use of video conferencing over Multiprotocol Label Switching (MPLS) Virtual Private Network leveraging Telkom’s existing platforms to linkup remand prisons to courts across the country [15]. This e-Gov initiative would greatly reduce current backlogs in the justice system, drastically cut huge cost of moving prisoners between remand-cells and courts, curtail incidents of escaping prisoners in-transit to court, shortage of human capacity in the justice system and issues to do with overcrowding of prisoners [7].

The e-Natis uses a state-of-the-art technology in providing essential e-services related to the South African Department of Transport. It is meant to handle services related to road-traffic law enforcement, specialized transactions like payment for the services over the internet and on automated teller machines, online car registration of cars by financial institutions, issuing and handling driving licenses and online real-time booking for learners’ licenses.

National e-Health Informatics is provided by the National Department of Health through the Provincial Departments of Health and Private actors. This is an initiative intended to bridge the digital divide by the rural poor and underprivileged community with its urban counterparts. The District Health Information Systems (DHIS) and e-TB Register are the two major successful e-Gov initiatives in South Africa thriving on the established Telkom and established mobile networks. These systems are used by health practitioners deep in the rural areas to collect health-related patient data and sent for further processing in well-equipped major laboratories in major hospitals and feedback is relayed back immediately. Mindset [14] e-Health Network is another e-Gov informational initiative, aimed at offering digital health educational content in video, computer-based multimedia and print formats in five of the eleven official languages [13] through direct broadcasting in television in all major hospitals and clinics outpatient waiting rooms across South Africa. The Mindset is intended to bring health-care awareness to patients and how they can take prevent and protect certain disease and seek medical attention.

IV. ANALYSIS OF THE SUCCESS AND CONSTRAINTS OF E-GOV INITIATIVES

A close analysis of the national and provincial e-Gov initiatives revealed that all of them accept the SARS e-

Filing and Botho Pele National Gateway systems are in the formative development stage – purely informational with no room for transacting online with the government. This is a great stride in all urbanized provinces with good literacy rate, which can benefit from the online available information regarding key government services and posted job advertisements. The SARS e-Filing is a typical e-Gov success story which has reached the transactional stage – offering comprehensive real-time financial transactions and services online to citizens and businesses. Other achievements have been realized in the area of ICT and mobile internet accessibility.

The Botho Pele National Gateway e-Gov system is another notable success offering online transactions on visa and passport applications; birth, death and marriage certificates; temporary and permanent residence permits, registering and deregistering as voter; and registering for unemployment insurance funds [6].

South Africa's Information Technology market is the largest in Africa, ranking 20th in the world in overall market size and 8th in IT spending as a proportion of GDP [9]. This is supported by the United Nations e-Government survey carried out in 2012 as indicated in Fig. 1. Overall, South Africa ranks 3 out of 54 countries in Africa and 101 out of 190 across the globe [10] in terms of e-government adoption. This is a resounding achievement.

Internet accessibility and use is the backbone for the thriving of e-Gov. Studies carried out in Table 1[11] shows that South Africa have the highest Internet penetration rate among all the countries under investigation, with 33.7% of the population 15 years or older using the Internet. Internet is accessed through a mobile phone by 70% of internet users [11]. This means even those in the disadvantaged rural remote areas of South Africa can access required e-Gov information without necessarily having to travel very long distances to urban areas – thus tremendously cutting travelling costs.

Despite South Africa’s significant investment in ICT infrastructure, policy and regulatory framework to effectively roll out e-government services, the country faces a number of challenges [7]. The first major one is adequate awareness, especially in deep rural areas. As stated in [12], “a long history of government service shows that citizens and business organizations are traditionally habituated to use brick and mortar government services for information collection, interaction, and all types of transactions that are basically operated offline.” Thus, e-Gov initiatives call for greater awareness by the government amongst all stakeholders.

Further compounding the e-Gov initiatives is the fact that an estimated 45 percent of South Africa’s population lives in

rural areas with far less developed ICT Infrastructure, high rural-urban digital divide, high rural-internet and computer illiteracy due to use of many local vernacular languages in all provinces and very long travelling distances to service centers with such internet service facilities. E-Gov initiatives require competent in-house champions to spearhead planning, development, implementation and maintaining. Nevertheless, the South African government has immense challenges in recruiting and retaining competent ICT specialists to administer e-Gov projects mainly due to massive brain drain of skilled personnel to developed countries or to the better paying jobs in the private sector. Aggravating this shortage is the failure by the higher education system to produce adequate graduates with the necessary ICT and managerial skills demanded by the government. Another intriguing factor is the gender imbalance gap in e-Gov workers, with the weight scale biased towards more males than females – government should encourage many females to take-up ICT jobs as a profession.

With specific reference to e-Health endeavours in South Africa, [1] cited that there are “major challenges: broadband penetration is low, bandwidth is expensive, many health-workers are computer illiterate, there is not a culture of data acquisition and analysis, and there are too few informaticians and medical practitioners with e-health experience, insufficient people across all levels are being trained in the field, current plans do not appear to incorporate the private sector, and there is the danger that a top down approach to implementation will be taken. Nevertheless, there seems to be a light at the end of the tunnel, with the proposed e-Healthy Policy starting to be implemented and take effect, though limited human capacity and required specialized skills in the national health-care sector may be an impeding factor.

V. CONCLUSION

In conclusion, the study found out that the South Africa government has made huge endeavours in its e-Gov adoption. With the exception of the SARS e-Filing and Botho Pele National Gateway systems in their transactions phases, all of South Africa's e-Gov initiatives are in its presence stage of purely online information dissemination. Most of the e-Gov initiatives have been slow in achieving their full potential due to several drawbacks typical to all developing countries, chief amongst them are failure to create adequate awareness on e-Gov initiatives amongst all stakeholders, lack of computer self-efficiency and experience of internet usage by the majority of rural and peri-urban disadvantaged citizens, poor infrastructures, corruption, fragile education system that fail to produce adequate competent graduates to meet employers' expectations, a huge gap between e-services and demand, and failure to allocate adequate financial resources to

champion e-Gov projects due to other more pressing issues. Despite all these challenges, it is commendable to realize that South Africa tops all countries in the African continent in its e-Gov endeavours. Furthermore, there is a huge political-will and substantial support and co-operation from the private sector and international donor agents.

VI. RECOMMENDATIONS

After gaining a profound insight from this study on E-Gov adoption in South Africa, the study recommends among other things to the government and any other policy makers and implementers, the following:

- To have in place an integrated impact evaluation and monitoring mechanism for all existing ICT Policies and implemented e-Gov endeavours, if possible at local government level – with the aim to have a clear picture of the impact of such initiatives on service delivery and customer satisfaction.
- The government should revamp the education system so that it will be aligned with the national ICT demands and make attractive working environment and packages to attract and retain scarce ICT skill, especially within the government institutions.
- Successful leaping-forward of e-Gov initiatives in South Africa from their current presence-phase to interaction, transactions or integration requires consented efforts and effective synergies among the public and private sectors and the international partners like UN, World Bank and ITU.
- In addition to focusing on the technical aspects and infrastructure successes, the government must lay down clear policies on consumer protection and privacy, and cyber-attacks.

Once adequately addressed, the government will realize that the e-Gov initiatives could be a catalyst for the nation's inclusive development, poverty eradication and establishment of a democratic society.

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TABLE 1. INDIVIDUAL INTERNET USE [11]

	15+ that use the Internet			Where the Internet was first used		Where did you use the Internet in the last 12 months?				
	2007/8	2011/12	Diff.	Computer	Mobile phone	Mobile phone	Work	Place of education	Another persons home	Internet Cafe
South Africa	15,0%	33,7%	18,7%	65,1%	34,9%	70,6%	35,8%	20,9%	14,3%	32,4%
Botswana	5,8%	29,0%	23,2%	70,6%	29,4%	64,1%	51,1%	32,2%	43,7%	58,3%
Kenya	15,0%	26,3%	11,3%	68,9%	31,1%	77,8%	31,4%	38,8%	38,9%	72,4%
Nigeria		18,4%		45,2%	54,8%	74,9%	29,3%	19,6%	30,3%	45,1%
Namibia	8,8%	16,2%	7,4%	60,1%	49,9%	87,3%	48,4%	36,0%	32,6%	22,5%
Cameroon	13,0%	14,1%	1,1%	82,1%	17,9%	29,7%	9,8%	20,1%	18,7%	80,0%
Ghana	5,6%	12,7%	7,1%	70,5%	29,5%	61,2%	34,6%	50,9%	34,5%	84,7%
Uganda	2,4%	7,9%	5,5%	28,2%	71,8%	81,3%	55,0%	51,2%	54,0%	74,0%
Rwanda	2,0%	6,0%	4%	70,8%	29,2%	70,9%	52,1%	30,7%	24,9%	50,2%
Tanzania	2,2%	3,5%	1,3%	45,8%	54,2%	74,7%	44,6%	24,4%	23,9%	62,8%
Ethiopia	0,7%	2,7%	2%	33,3%	66,7%	80,9%	17,4%	20,9%	3,5%	42,2%

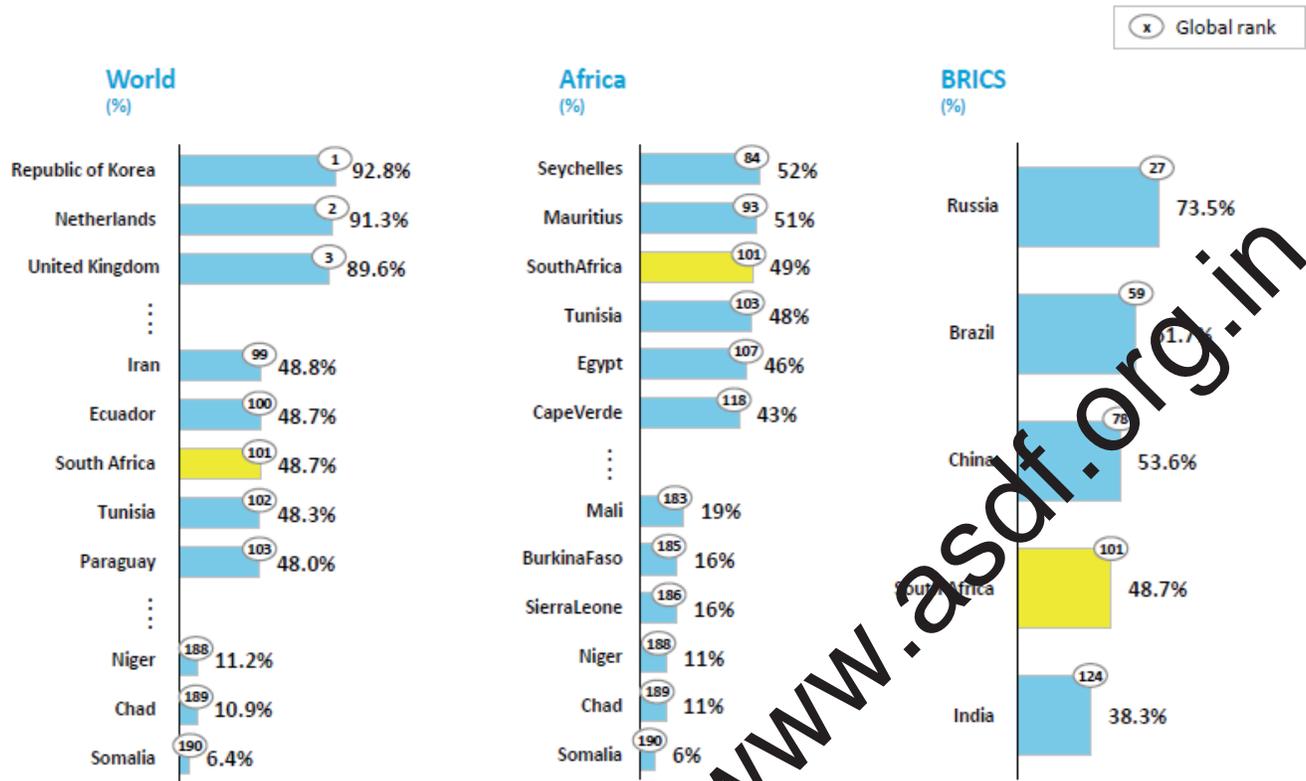


Figure 1. United Nations e-Government survey [10], [15]

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