Informatics & Design Papers and Reports   Faculty of Informatics & Design

9-1-2009

e-Government in South Africa: e-service quality access and adoption factors

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PROCEEDINGS OF THE
11th ANNUAL CONFERENCE
ON WORLD WIDE WEB APPLICATIONS

2-4 September 2009
Port Elizabeth
South Africa

Editor:
P.A. van Brakel

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ABSTRACT

Over the past decade the World Wide Web (WWW) has had far reaching implications on the way in which information is shared, and services are rendered by both public and private organisations. One important issue on the research agenda has been the adoption of the web by the public sector, in the form of electronic government or e-government. Previous studies show that the benefits brought about by e-government adoption include increased convenience for citizens in areas such as filing tax returns, increased transparency on government activities and greater access to government information. Nevertheless, governments face great challenges to make their investments in the web more successful. This paper examines two factors that influence e-government success, viz, service quality dimensions in the online environment; and citizens' attitudes towards e-government and their expectations in respect of government responsibilities in facilitating access and adoption thereof. Based on a literature review, six service quality items fundamental to the success of e-government websites were identified and reported on in WWW 2008. This paper expands on the initial findings by providing an in-depth discussion of the service quality dimensions which were identified in the previous paper. In addition, this paper also reports on citizens' expectations and attitudes in relation to the accessibility and adoption of e-government services, and government efforts to make accessibility and adoption achievable. The paper concludes that without also integrating strategies to facilitate access to and adoption of e-government services for the majority of the citizens, then service quality in e-government would only benefit few citizens, thus rendering e-government a tool for socio-economic divide.

Keywords: World Wide Web, e-government, support services, web adoption, information systems, service quality, citizens.

1. INTRODUCTION

In the South African post-apartheid era, there continues to be high expectations of government in respect of improved delivery of service and of closer consultation with citizens. Such expectations are not unique to this country, and in this regard Mutula (2008:235) calls on all governments to recognise that the implementation of e-government systems affords them the opportunity to enhance service delivery and good governance. The implementation of e-Government has been widely acclaimed in that it provides new impetus to deliver services quickly and efficiently (Evans & Yen, 2006:208). In recognition of these benefits, various arms of

the South African government have embarked on a number of e-government programmes. Examples of these include inter-alia, the Batho Pele portal, SARS e-filing, the e-Natis system, electronic processing of grant applications from remote sites, and a large number of departmental information websites. Notwithstanding a number of well publicised e-government ventures such as the latter, analysts and researchers such Farelo & Morris (2006:11) consider the state of e-government in South Africa to be at rudimentary stages. There are various factors which collectively contribute to such an assessment. Amongst these, key factors relate to a lack of a clear strategy to facilitate uptake and adoption of e-government services as well as evaluation frameworks to assess expectations of citizens who are one of the primary user groups of these services.

Taking into account the foregoing, this paper is a sequel to the work in progress reported at WWW 2008 (Kaisara & Pather, 2008). In this paper we expand on the preliminary findings presented last year in which the problem of a lack of frameworks for evaluating e-government web-sites was reported, and in which an e-service quality model for e-government web-site evaluation was proposed. Specifically this paper expands of the initial findings by providing an in-depth discussion of the service quality dimensions which were identified in the previous paper. In addition, this paper also reports on citizens' expectations and attitudes in relation to the accessibility and adoption of e-government services, and government efforts to make accessibility and adoption achievable.

The paper is organised as follows: The empirical work is framed by a discussion of three key areas, viz. the concept of community ICT practice as it relates to e-government adoption; legislation and policies pertaining to access and adoption of ICTs in the South African context; and the relevance of e-service quality in e-government adoption. Following on this the research methods and design used in the study are described. Lastly the results and findings are discussed.

2. e-GOVERNMENT AND COMMUNITY ICT PRACTICE

No matter how well designed e-government systems are, it is of little consequence if policy-makers do not incorporate access and adoption strategies which take into account factors affecting especially digitally marginalized communities. Government cannot meet citizens' adoption targets if they fail to understand why citizens adopt e-government services over traditional delivery channels (Gilbert, Balestrini & Littleboy, 2004:286). Access alone is inadequate in realizing the transformative power of ICTs (Nnadi & Gurstein, 2007) and therefore it is essential that e-government take into account other factors that may influence success of e-government as availability of technology alone does not guarantee success.

Research suggests that successful citizen-centred e-government initiatives engage the target community and encourage citizen participation in the roll-out of the initiatives (Farelo & Morris, 2006:4). This is recognised in at least one local programme, which has an underpinning strategy to provide e-government services in the context of "*a citizen orientation towards access to services, and service delivery...*" (Centre for e-Innovation, 2004:9). Key pillars of a successful e-government strategy should also look beyond access to ICTs. Coward, Gomez & Ambikar (2008:1-8) suggest that e-government services offered must be adopted and useful to citizens, in order to achieve social and economic development. In light of the foregoing, and after Gurstein (2003), we highlight three key stages of community ICT practice which need to be taken into account in the planning and rollout of e-government programmes in figure 2.1.

	Three Stages of Community ICT Practice	Stage Characterised by;
STAGE ONE	*Access* Communities gain access through various social networking technologies such as the Internet/World Wide Web, etc.	*At this stage, facilities such as telecentres are provided to bridge the digital divide.*
STAGE TWO	*Adoption* Individual citizens and small business find useful purposes for the usage of applications such as email, Internet, browsers, word processing, spreadsheets, databases, or diaries.	*When citizens adopt e-government, the service quality dimensions gain relevance. It is at this stage that impressions of citizens towards e-government websites are formed.*
STAGE THREE	*Social Appropriation* ICT becomes an important and self-motivated part of everyday social practice.	*Through effective use of e-Government services citizens integrate ICTs into every day life as active and cooperative participants in governance.*

Table 2. 1: Stages and characteristics of e-government diffusion

Al-adawi, Yousafzai & Pallister (2005:1) posit that one of the major downsides of e-government is low adoption rates. Concerns on access and adoption must be identified and the gap between the two stages bridged. These authors warn against the prevailing tendency to disregard factors that influence citizens' adoption of technology. Coward *et al*. (2008) found that disregard for relevant local content, lack of trust in technology and enabling environment are some of the factors that hamper adoption of e-government. Although governments are investing heavily in improving their websites, it is prudent that they gauge citizens' attitudes and willingness to adopt services provided through these websites (Al-adawi, 2005). This is supportive of the need therefore to take into account factors which will promote adoption of e-government in tandem with ICT access strategies.

3. LEGISLATION AND POLICIES PROMOTING ACCESS TO AND ADOPTION OF E-GOVERNMENT

Vassilakis, Lepouras, Fraser, Haston & Georgiadis (2005:61) posit that legislation or lack thereof is the most important barrier to e-services. The South African government was an active participant at the World Summit on the Information Society (WSIS), and its current information society policies are informed by the Geneva declarations and the Tunis agenda and associated commitments. The outcomes of the WSIS urge governments to enact policies to ensure efficient equitable and universal access (WSIS, 2005:4).

In South Africa the legislators have been congnisant of universal access issues well before the WSIS. In recognition of the need to promote ICT access to the majority of the citizens marginalised by the apartheid government, the government set up the South African Universal Services Agency (USA) through the Telecommunications Act of 1996. Through this legislation, the first telecentre (Gaseleka Telecentre) was established to provide access to telephones and computers to the Gaseleka residents and the 34 adjacent villages (Benjamin, No date:75). Although the Telecommunications Act of 1996 was repealed by the Electronic Communications Act of 2005, the Universal Services Agency, renamed as the Universal Service and Access Agency of South Africa, was incorporated under the new act and thus continues with its goal of promoting universal access by "*all areas and communities in the Republic to electronic communications services and electronic communications network services…*" (South Africa, 2006:100). The act further compels the agency to research into matters relating to its functioning. Currently, the agency is in the process of concluding a consultative process to define universal access and universal service as mandated by the Electronic Communications Act of 2005.

Other legislation is also supportive of achieving access. The Electronic Communications and Transactions Act (No. 25 of 2002), for example aims to facilitate electronic communications and transactions in the republic so as to "*promote universal access primarily in underserviced areas.*" The Act also endeavours to promote e-government services, remove and prevent barriers to electronic communications and to ensure that the special needs communities as well as the disabled are not marginalised (South Africa, 2002:7).

4. RELEVANCE OF E-SERVICE QUALITY IN E-GOVERNMENT ADOPTION

Previous studies (e.g. Chen & Chang 2003; Pather, Remenyi & Erwin 2004) have shown that in a web-based environment, high levels of e-service quality (e-SQ) lead to greater levels of adoption and usage. In the commercial sector e-Service Quality is defined as "the extent to which a website facilitates efficient and effective shopping" (Parasuraman, 2004:50). The objective of this study is to investigate how e-SQ models can be adapted for evaluating e-government web-sites in a South African context.

Adoption of e-government services will be enhanced if the dimensions e-SQ are taken into account during the planning and implementation of online services. Citizens continue to demand continual improvement in the quality of services rendered and governments have to meet these shifting expectations (Wisniewski, 2001:387). Wisniewski (2001:382) opines that service quality, as articulated by Parasuraman, Zeithaml & Malhotra (2005:214), is the gap score between expectations and perceptions allows for the capturing of not only citizens perceptions of current service, but their expectations as well.

5. RESEARCH METHODS AND DESIGN

As e-SQ was identified as a suitable mechanism for evaluation (*see* Kaisara & Pather, 2008), we sought to determine the e-SQ dimensions that could be used to evaluate e-government websites. To undertake such as an exercise, we engaged in two phases of field-work.

In the first phase, we used focus groups to derive preliminary e-SQ dimensions. Morgan

(1996:132) states focus groups have been used to capture consumers' views as well as in developing effective programs. Scholars (e.g. Wolfinbarger & Gilly, 2003; Parasuraman *et al.* 2005) have adopted focus group to obtain consumers' expectations when developing e-service quality evaluation instruments. The qualitative data from focus groups included session recordings, session notes and response cards. A total of fifty six citizens were randomly selected to participate in the study. As indicated in table 5.1, the demographic profile of the participants included students, industry professionals and academics among the participants. However, we eliminated those who had less than two years Internet experiences, as searching for information and transacting online requires *technical literacy* which is not required in traditional service points (Long & McMellon, 2004:78). This literacy is acquired through experience using the Internet, and citizens' concerns shift with experience (Blake, Neuendorf & Valdiserri; 2005:1210).

VARIABLE		# OF PARTICIPANTS	PERCENTAGE
Gender	Female	28	50%
	Male	28	50%
Age Range	<25	19	34%
	25-30	15	26%
	>30	22	40%
Highest Qualification	Diploma	11	20%
	B. Degree/Honours	29	52%
	Masters	13	24%
	PhD	2	4%
Average hours spent online per week	19.21		
Approximate years of internet usage	2-5 years	25	46%
	6-10 years	21	38%
	>10 years	10	16%

Occupation	Student	24	42%
	Industry Professional	30	54%
	Unemployed/Between jobs	2	4%

Table 5. 1: Demographic profile of focus group participants

In addition to specific service quality aspects that were the subject of the focus groups, the analysis of the qualitative data also highlighted concerns of the participants in respect of access and adoption of ICTs. As a means of investigating this parallel issue further, in the second phase of the investigation the outcomes of the focus groups were used as a basis to formulate a questionnaire. The questionnaire was hosted online, and participants were invited to rate the importance of access and adoption related factors on a scale of 1-5, with 5 representing the highest level of importance. A total of 106 responses were captured.

6. RESULTS AND DISCUSSION

Through the focus groups, we identified six dimensions that are *sine qua non* to successful e-government systems. We presented these dimensions in our 2008 work in progress paper. Although we set out to identify e-service quality dimensions applicable to e-government, we also found that there are important access and adoption concerns that government managers must address for e-government initiatives to be successful. In this section two aspects of the results are presented. Firstly we elaborate on the e-SQ dimensions which were identified during the focus groups. Secondly we discuss the access and adoption expectations of citizens which were initially identified during the focus groups, and which were subsequently further investigated through a survey.

6.1 Focus group results: e-service quality dimensions

6.1.1 Information quality

Information Quality has become a critical concern for the private and public sectors (Lee, Strong, Kahn & Wang, 2002:133), as it has proven to be strongly associated with the use of WWW technologies (DeLone & McLean, 2003:21). Some studies have found that the most common reason citizens visit e-government websites is to obtain information (e.g. Thomas & Streib, 2003:90 and Misnikov, 2005:2). Yet the WWW is a global information resource comprising of information from various autonomous sources, with no control over the content availed online. Information is the basis upon which decisions are made, thus quality is essential to enhance accurate decision-making. To highlight the importance of information quality, DeLone & McLean (2003:18) posit that this dimension may be the most important in a WWW Information System. Peppard & Rylander (2005:338) state that information defines the products and services availed online. Consequently organisations need to treat information as a resource that ultimately serves as a tool satisfy the needs of users. The South African government has, through the Batho Pele principles, endeavoured to make access to quality information available to those who need it regardless of location (DPSA, no date). The provision of accurate information is the biggest challenge that e-government websites at rudimentary stages face

(Gartner Group 2000, in Bellanger & Hiller, 2006:51)[1].

6.1.2 Security/trust

The security/trust dimension is an important concern, although different levels of e-government have differing needs for the dimension (Bellanger & Hiller, 2006:53). Portals at rudimentary stages are unlikely to invoke security concerns in citizens as mature e-government initiatives whereby citizens can transact online. Mature e-government initiatives require citizens to provide more information to the WWW Information System, thus exposing the citizen to hackers and viruses. Governments need to foster a sense of trust by limiting the sharing personally identifiable information with entities that the citizen did not furnish the information to (Jaeger, 2003:325). The Electronic Communications and Transactions Act (No. 25 of 2002:17) prohibits data collectors sharing citizens' personal information to third parties without express written or permitted by law (South Africa, 2002). A sense of security/trust is also an important determinant of whether citizens acquire services through WWW or decide otherwise (Bellanger & Hiller, 2006:53). Failure to cultivate a sense of security/trust could emerge as an impediment to a successful e-government programme (Cox & Dale, 2001:129; Jaeger, 2003:325 and Davison, Wagner & Ma, 2005:282).

6.1.3 Communication

WWW enhanced communication is embedded in social practice, viz, citizens expect the protocol of communication that guides everyday life to apply to the cyber space as well (Peppard & Rylander, 2005:338). Communication is an important dimension of e-government adoption which could lessen resistance to WWW (Gupta & Jana, 2003:382). Citizens need quick responses and feedback if they experience problems (Zeithaml *et al.* 2000:16), yet some e-government websites have invalid email addresses, do not respond to queries or respond with an automated response (Bertot & Jaeger, 2006:166). Although the South Africa Government Online portal is running a "what do you think?" survey where users can contribute on making the site better, there is no "contact us" facility that lets citizens provide feedback and queries on their site-use experiences. Failure to understand citizens' concerns risks alienating citizens who might not be satisfied with the e-government services.

6.1.4 Site aesthetics

Site aesthetics is important because websites are visual mediums. E-government websites to be visually appealing, yet care must be taken not to incorporate too much colour or animation as this could potentially distract citizens. This point perhaps take a greater significance in official websites more than in commercial websites, where hedonic aspects may be incorporated to improve user experience. E-government websites must also use standard national colours to communicate the "*official ness*" of a website. Cox & Dale (2001:129) posit that colour is an important factor of quality as it reflects the corporate image of the website. Content that is well organised and clearly labelled makes it easier for citizens to navigate around the website, and locate relevant information in a timely manner.

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[1] Gartner Group. 2000. E-government security: voting on the internet. *Research Notes, Strategic Planning Assumption*. 18 January.

6.1.5 Design

Design encapsulates issues such as links to other websites and the availability of search facilities. The national e-government portal should direct citizens to any department they need to contact. Conversely, national department websites should be an entry point for a citizen who might have been "lost" in the cyberspace. The provision of such "one-stop shops" is one of the most desirable features of e-government (Reddick, 2004:53). As e-government websites become so sophisticated, this dimensions gains importance. More mature websites are characterised by interactivity, recognising citizens based on previous visits and customising information and system-wide political transformation (West, 2004:17).

6.1.6 Access

Accessibility is the extent to which users have equal access to the website. Bertot & Jaeger (2006:163) posit that governments ought to design their websites in a manner that ensures that universal access is afforded to citizens. A website must have assistive technologies such as narrators and enlargement screens to assist those citizens who might be in need of such technologies (Jaeger, 2006:170). Currently, we could not identify any South African e-government website that has such technologies. In a country of diverse socio-economic and cultural groupings, accessibility is not yet enjoyed by many. Disabled people may also be disenfranchised by the lack of assistive features in e-government websites. However, it must be remembered that most South African e-government websites are at a rudimentary stage, except some specialised ones such as the South African Revenue Service website, which is transactional.

6.2 Survey results: access and adoption

Participants articulated their expectations on the support they expect government to provide when rolling-out e-government initiatives. When we considered the "*need expressed*" we found these expectations to be access or adoption related. We cast these items verbatim into a questionnaire and asked citizens to rate the importance of these items on a scale of 1-5, with 5 representing the highest level of importance. A total of 106 citizens rated the items. The table 6.1 below shows the items and the rating average for each item.

Item	Ancillary Service (Access and adoption expectations)	Average response to Likert scale (1-5)*
Access	It is government's responsibility to make it affordable for me as a citizen to have access to the Internet.	3.8
Access	It is government's responsibility to provide the facilities such as Internet cafes for me to access its online services.	3.2

Access	I expect the government to provide facilities for me to access its websites within walking distance from my home.	3.3
Access	I expect the government to provide me with a computer and Internet facilities in my home if it expects me to uses its online services.	2.2
Access	Government must provide me with access to the Internet at no cost to me	2.5
Adoption	The government must ensure that it takes steps to popularise the existence of its website and online services.	4.1
Adoption	I expect government to train/assist citizens on how to best make use of its online services.	3.8

Table 6. 1: Access and adoption expectations of citizens
*(Scale: 1 = strongly disagree… 5 = strongly agree)

Our findings vindicate Wisniewski's (2001:387) assertion that in the public sector there are wider agendas than simply service quality. These include the improvement of access to services, equal service provision and providing the services efficiently. Service quality focuses on the post adoption use of e-government (Gilbert *et al.* 2004:288). Overemphasis on service quality risks neglecting the access and adoption factors that are fundamental to the success of e-government.

Another important consideration for e-government managers in promoting adoption is imparting citizens (especially the poor and illiterate) with the skills necessary to effectively utilise e-government services. Forestier, Grace & Kenny (2002:643) posit that the absence of a training program specifically tailored for the poor covering access, training and content development risks rendering WWW a tool of social disparities. Although provision of manpower to train citizens might be hampered by resource constraints, schools and training centres as defined by the South African Schools Act (Act No. 84 of 1996) and Further Education and Training Act (Act No. 98 of 1998) may apply for funds though the Universal Service and Access Fund (South Africa, 2005:106). Some non-governmental consortiums such as W3C provide various training materials that may greatly enhance the computer skills of citizens.

In addition to access and adoption concerns that government managers must address to improve the success of e-government, citizens expected government to educate them on the risks involved with using e-government. Some participants in the focus group expressed that;

> *"It is government's responsibility to make citizens aware of the potential risks of online transactions."*

The average score for this statement was 3.99, which indicated that the majority of participants were concerned about risks associated with utilising e-government. This item is also related to the security dimension; hence failure to elucidate the potential pitfalls of adopting e-government

may hinder success of e-government.

Another important finding was the prevailing attitude of citizens towards e-government. When asked if they would continue to visit physical offices if they had the e-government option, the average score was 2.32, which indicated that most of the participants would embrace e-government if available. Gilbert *et al.* 2004:297) established that some of the reasons citizens would prefer to use e-government over the traditional brick-and-mortar services is to save time and avoiding interaction. They noted that this could due the perception that public sector employees are less efficient in comparison to their private sector counterparts. Some participants in the focus group also expressed similar sentiments, when they stated that;

> *I believe that online government services will definitely be more courteous than   what   I have experience in the physical interactions.*"

The survey score on the Likert scale for the above item was 3.98, which indicated an above average level agreement with the statement. This is an important finding as it indicates a willingness to adopt e-government over traditional government service provision. However, we caution that e-government should not be treated as a panacea or alternative for traditional government, but rather as an important dimension in the pursuit of ubiquitous governance.

7. CONCLUSIONS

We have elaborated on the importance of promoting access and adoption strategies to enhance e-government services. The fact that most citizens would rather adopt e-government services than visit physical offices should give impetus to the deployment of e-government services. Furthermore, government leaders are increasingly aware of the potential benefits of adopting e-government (Ebrahim & Irani, 2005:590). Consequently the South African government has enacted various pieces of legislation to promote the accessibility and adoption of e-government services, as well as the provision of high quality public services as outlined in the Batho Pele white paper (South Africa, 1997).   The question which remains however, is how effective have these policies been in facilitating access and promoting adoption.

Countries of limited resources like South Africa cannot afford to implement poor e-government systems and deployment must be where it is needed most. Paradoxically, the low levels of e-government presence in South Africa (Farelo & Morris, 2006:11) give government officials the advantage "*getting things right the first time.*"

This paper has drawn attention to the importance of addressing ancillary services that support the implementation of e-government services. We have highlighted pieces of legislation that the South African government has enacted to make accessibility and adoption of electronic services ubiquitous. Furthermore, South Africa is a signatory to the United Nations Convention on the Rights and Dignity of Persons with Disabilities (Swanson-Jacobs, 2009). Hence e-government access and adoption policies should also take into account the special needs for the disabled.

Finally, we invite scholars to contribute further to this important aspect of research on e-government. A clear case has been made that e-government services need to be designed and implemented to take into account the tenets of service quality in order to fully realise the expected benefits. However, what is also important is that a more comprehensive e-government

strategy requires the associated issues of access to ICTs and concomitant strategies to promote adoption to be accommodated. Without integrating such important pillars of community based ICT practice into an e-government strategy the benefits of online government would only be realised by a privileged few and thus would perpetuate the socio-economic divide.

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