

FACTORS FOR E-GOVERNMENT ADOPTION: LESSONS FROM SELECTED AFRICAN COUNTRIES

MERCY MLAY KOMBA

Department of Information Science
University of South Africa, South Africa
mercymlay@yahoo.com

PATRICK NGULUBE

School of Interdisciplinary Research of the College of Graduate
Studies
University of South Africa
ngulup@unisa.ac.za

ABSTRACT

This article discusses various problematic issues of providing access to, and promoting the wider utilisation of government information as important factors in e-government adoption. The Tunisian, Mauritian and Egyptian e-government experiences are examined in this article in order to highlight both good practices and remaining challenges in e-government adoption. Some of the good practices that we can benefit from, may be summarised as: formulating a viable national information and communication technology strategy (ICT-based) for modernising the telecommunications infrastructure, developing a regulatory framework for the deployment of a digital economy, obtaining international cooperation in ICT, developing skilled human resources management in ICT, developing a national digital culture in order to overcome the problems of low individual usage and adoption of ICT, establishing an information infrastructure to connect the various local government authorities, and establishing security standards in order to address threats. The study concludes that overcoming the obstacles of providing access to, and promoting the wider utilisation of government information, remain some of the biggest challenges for any government planning to adopt and implement e-government.

KEYWORDS

African countries and e-government, e-government adoption, e-government lessons

1 INTRODUCTION

Encouraging access to e-government information is a challenge that involves the creation of a relationship of trust between a government and its citizens. Failure to achieve this relationship will hinder the adoption, by the public, of e-government (Carter & Belanger 2005a; Carter & Weerakkody 2008; Chircu & Lee 2005; Dimitrova & Chen 2006). Therefore, promoting greater familiarity with, and usage of information and communication technology systems (ICTs), will result in the wider utilisation of e-government services by the public (Kolsaker & Lee-Kelley 2008; Thomas & Streib 2003). African countries have been slow to adopt the technologies necessary for e-government services and little attention has been given to this in the existing literature. A large number of countries in Africa have nevertheless improved their online presence (Rorissa & Demissie 2010:167). By 2008, eight of the 12 countries in the world that were not online in 2008, stemmed from Africa, and this situation prevailed despite the fact that many African governments had set up national websites by then (UN 2008). Tunisia leads Africa in e-government development, followed by Mauritius and Egypt. The majority of countries in the top ten rankings are from developing countries in northern and southern Africa (UN 2010). The aim of this study is to call attention to the remaining problematic issues of providing access to, and promoting the use of government information as important factors in e-government adoption, and to draw valuable lessons on e-government experiences from the leading countries in Africa. The following discussion focuses on the implementation of e-government and highlights two important factors that influence e-government adoption.

2 E-GOVERNMENT ADOPTION

Kumar, Murkeji, Butt and Persaud (2007:69) describe ‘adoption’ as “a simple decision of using or not using online services” depending on certain factors. Likewise, Gilbert, Balestrin and Littleboy (2004:287) define e-government adoption as “the individual’s decision on whether or not to use the technology based on perceptions of the technology, for example, the relative advantages, compatibility, flexibility, usefulness, ease of use, perceived risk, trustworthiness, external influences, internet safety, interpersonal influences and facilitating conditions”. This definition by Gilbert et al (2004:287) provides the basis for the approach adopted in this article.

3 ACCESS TO GOVERNMENT INFORMATION

Accessibility describes the degree to which a product (device, service, and environment) is accessible to as many people as possible. Accessibility can be viewed as the ability to access the functionality and possible benefits of some system or entity (Keoduangsine & Goodwin 2009:610). Over the past decade the internet has changed the information-

seeking behavior of people in general, and has reshaped virtually every channel of access to information, for example, newspapers, television, movies, magazines, books, music, and all forms of telecommunications (Lyons 2009). Aldrich, Cornwell and Barkley (2000:274) examined the impact of this transition to a mix of print and electronic material and found that the web has changed the way of accessing government information. Nowadays people use the web (e-government) to access a growing amount of government information rather than perusing hard copy documents or visiting the library.

E-government provides easy access to information and enables citizens to contact government agencies through national, state and local websites (Means & Schneider 2000:121). Services offered on national, state, and local websites include the following:

- ordering publications
- downloading publications or forms
- filing complaints
- accessing on-line databases (e.g. access to voting records of elected officials)
- making user payments (e.g. to pay parking tickets)
- filing and paying state taxes
- accessing fully-executable services (e.g. driver's license renewals and voter registration)
- voting on-line, and
- obtaining state park information (Goings, Young & Hendry 2003:5–6)

Effective and timely user access to public information is one of the most fundamental requirements for e-government success (Alghamdi, Goodwin & Rampersad 2011:485). However, a lack of computer availability, internet access, or even basic electrical and telecommunications infrastructures, will hinder access to e-government information (Singh & Sahu 2008:480). Mossenburg and Stansbury (2003) identify ethnicity, income, age and education as significant predictors of access to technology. Adoption of e-government is impossible without internet access (Singh & Sahu 2008:481).

In addition, the lack of adequate technical skills remains one of the barriers to the universal usage of e-government. People seek assistance with e-government systems from public libraries primarily because they lack the technical skills required to use the online functions, or they are simply uncomfortable engaging in online interactions without guidance (Bertot, Jaeger & McLure 2006; Bertot, McClure & Jaeger 2008). Even for people who are familiar with technology, the use of e-government services is often impacted negatively by difficulties in searching for and locating the desired information, in addition to a general lack of familiarity with the structure of government, a lack of education about the value of e-government, language barriers and attitudes toward technology and government (Jaeger & Thompson 2003 and 2004).

Missingham (2008:32) identifies a lack of knowledge about services and security, and a general mistrust of these services, as limiting factors in the use of government information systems online, thereby restricting the success of online service delivery. The success of e-services depends largely on the extent to which users of such services, that is, citizens in general, make use of them (Colesca & Dobrica 2008b:20).

The fundamental factors influencing a particular citizen's continued use of e-government websites, include issues such as its perceived usefulness, the perceived ease of use of e-government websites and the person's level of computer efficacy (Wangpipatwong, Chutimaskul & Papasratorn 2008:55). People initially tend to use the internet primarily for what interests them, and may not use it beyond this self-imposed limit unless it is seen as particularly advantageous to do so.

E-government users define usefulness in terms of information and service functionality (Kolsaker & Lee-Keely 2008). A high perceived value of e-government services will tend to raise usage intentions significantly (Carter & Bélanger 2005b). Perceived usefulness determines the degree of actual e-government adoption (Wangpipatwong et al 2008). Accordingly, it is to be expected that experienced users of e-government systems would perceive e-government as providing greater value than would be the case with less frequent users, suggesting that user-efficacy influences value perceptions. Non-users of e-government may nevertheless appreciate the potential value of e-government systems.

Increased use of ICT makes people more comfortable with the use of digital technology when dealing with government, and this is reflected in a greater general use of e-government systems as indicated by a number of studies (Kolsaker & Lee-Kelley 2008; Thomas & Streib 2003). This is due, among others, to the following factors:

- experience and comfort in the use of ICT
- actual experienced benefits, and
- a more positive stance towards developed (and confirmed) technology through use (Mao & Palvia 2008; Ping, Aikman & Heshan 2008)

There are relatively few studies that examine the scope of access and the use of e-government systems. Most existing studies are technology-focused and are based on examining e-government systems development (Yang & Rho 2007; Liou 2008). The existing studies also examine the provision of web-based services, information and internet-based transactions, the public's capacity to utilise e-government services including the number of public internet connections and broadband penetration (Layne & Lee 2001; Norris & Moon 2005). These studies tend to focus on the context of the developed world, which may have limited relevance to countries in Africa. There is a need for more studies that are relevant to e-government thinking in Africa than is currently the case. Lessons drawn from African contexts are more likely to benefit the implementation and adoption of e-government in Africa. Countries such as Tunisia,

Mauritius and Egypt currently lead the development of e-government in Africa, and much can be gained from examining their e-government models.

4 LESSONS LEARNT FROM THE EXPERIENCES OF TUNISIA, MAURITIUS AND EGYPT WITH E-GOVERNMENT

Tunisia has made significant progress in e-government development, for instance, the country has an ICT-based national strategy for modernising their telecommunications infrastructure, it has formulated a regulatory framework in support of a digital economy, it has established close cooperation with international ICT expertise and it has developed human resource management skills in ICT (Jebali 2008; Netshitenzhe 2011:49–56). In addition, Tunisia has successfully created a national digital culture which helps to overcome the problems of low individual usage and the general adoption of ICT, by promoting, for example, family PC and internet access programmes (Jebali 2008; Netshitenzhe 2011:49–56). However, the current infrastructure and public e-readiness is not sufficient for the objectives of the declared strategy to be achieved. The internet is expensive and beyond the reach of many, with the result that the online presence is still limited. Moreover, e-government services have not yet come to be fully accepted or used by the public due to the prevailing bureaucratic culture. There is also limited support from the local government authorities of Tunisia (Jebali 2008; Sadok & Djemaiel 2007).

Mauritius, on the other hand, has a high infrastructure score and has successfully developed various e-government initiatives (Rorissa & Demissie 2010; Board of Investment Mauritius [sa]; Waema & Adera 2011:9). The establishment of an information infrastructure to connect the various local government authorities is the key enabler of the e-government initiatives in Mauritius (Waema & Adera 2011:7). Moreover, the government of Mauritius has a well-developed vision for ICT, thus providing a solid base for e-government (Information and Communication Technology Authority [sa]). The government has also taken various measures to address the regulatory and legal frameworks for ICT (National Computer Board 2003). Additionally, the government has implemented security standards in order to address threats (Waema & Adera 2011:145). All ministries and departments have been wired and all buildings are interconnected in an integrated and secure network to facilitate collaboration, information-sharing and coordination of activities within the civil service (Waema & Adera 2011:145).

Finally, Egypt has also invested heavily in ICT infrastructure and in providing affordable access to ICT services (Abdelsalm, Elkadi & Gamal 2010; Liebenau 2010:196). Like Tunisia, the Egyptian government has reduced the cost of online services in order to encourage citizens to use online services (Salem & Jarrar 2008). Despite all these initiatives, citizens still continue to use manual processes, which is a hindrance to

e-government success (Salem & Jarrar 2008). In addition, the lack of a comprehensive e-government strategy and an accompanying physical infrastructure is a further hindrance to e-government success in Egypt (Liebenau 2010:197). Other obstacles are poor legal frameworks, the digital divide and the continued resistance to change (Salem & Jarrar 2008).

5 CONCLUSION

Despite the challenges outlined, the countries described above have shown that some e-government services can be implemented successfully. It is important, therefore, to examine these countries in order to find good practices in the implementation of e-government in Africa, and also to examine their strategies and solutions to identify what works and what does not. In summary, the following are some examples of good practices gained from these countries' experiences:

- the formulation of an ICT-based national strategy for modernising the telecommunications infrastructure
- the establishment of a regulatory framework to support a digital economy
- ensuring international cooperation in ICT
- the development of adequate human resource management structures in ICT
- the promotion of a national digital culture in order to overcome the problems of low individual usage and the adoption of ICT
- the establishment of an information infrastructure to connect the various local government authorities, and
- the establishment of stringent security standards to address threats

Easy access and the liberal use of government information are some of the factors that hinder the adoption of e-government in Africa (Jaeger & Bertot 2010:373; Al-Busiaidy & Weerakkody 2008:1; Porter 2002). Overcoming these challenges, therefore, presents one of the biggest challenges to the government of any country planning to implement and adopt e-government.

REFERENCES

- Abdelsalm, HME, Elkadi, HA & Gamal, S. 2010. Setback and remedy of local e-government projects: a case study from Egypt. Article presented at the 4th International Conference on Theory and Practice of Electronic Governance, 25–28 October, New York.
- Al-Busiaidy, M & Weerakkody, V. 2008. Factors influencing e-government implementation progress in Oman: a discussion. European and Mediterranean Conference on Information Systems 1–9, 24–28 June, Dubai, UEA. <http://www.iseing.org/emcis/emcis2008/Proceedings/>

- Late%20Breaking%20Articles-Un-refereed/Contributions/LBP%201/EMCIS-2008-%20Albusaidy.pdf (Accessed 21 December 2011).
- Aldrich, DM, Cornwell, G & Barkley, D. 2000. Changing partnerships? Government documents departments at the turn of the millennium. *Government Information Quarterly* 17(3):273–290.
- Alghamdi, IA, Goodwin, R & Rampersad, G. 2011. Suggested e-government framework for assessing organizational e-readiness in developing countries. *Communications in Computer and Information Science* 252(4):479–498.
- Bertot, JC, Jaeger, PT & McClure, CR. 2006. I want you to deliver e-government. *Library Journal* 131(13):34–39.
- Bertot, JC, McClure CR & Jaeger, PT. 2008. The impacts of free public internet access on public library patrons and communities. *The Library Quarterly* 78(3):285–301.
- Board of Investment Mauritius. n.d. Mauritius – a global island in the making. www.boimauritius.com (Accessed 6 December 2011).
- Bwalya, KJ and Zulu, SFC. 2012. Handbook of research on e-government in emerging economies: adoption, e-participation, and legal frameworks. Hershey, PA: IGI Global.
- Carter, L & Belanger, F. 2005a. The utilization of e-government services: citizen trust, innovation and acceptance factors. *Information Systems Journal* 15:5–25.
- Carter, L & Bélanger, F. 2005b. The influence of perceived characteristics of innovating on e-government adoption. *The Electronic Journal of e-Government* 2(1):11–20.
- Carter, L & Weerakkody, V. 2008. E-government adoption: a cultural comparison. *Information System Front* 10:473–482.
- Chircu, AM & Lee, DHD. 2005. E-government: key success factors for value discovery and realization. *Electronic Government* 2(1):11–25.
- Colesca, SE & Dobrica, L. 2008b. Adoption and use of e-government services: the case of Romania. *Journal of Applied Research and Technology* 6(3):204–217.
- Dimitrova, V & Chen, Y. 2006. Profiling the adopters of e-government information and services: the influence of psychological characteristics, civic mindedness, and information channels. *Social Science Computer Review* 24(2):172–188.
- Gilbert, D, Balestrin, P & Littleboy, D. 2004. Barriers and benefits in the adoption of e-government. *The International Journal of Public Sector Management* 17(4):286–301.
- Goings, DA, Young, D & Hendry SH. 2003. Critical factors in the delivery of e-government services: perceptions of technology executives. *Communications of the International Information Management Association* 3(3):1–15.
- Hood, C. 1983. *The tools of government*. London: Macmillan.
- Information Communication Technology Authority. n.d. Information and Communications Technology Authority: secure communications for all. www.icta.mu/icta/ (Accessed 6 December 2011).
- Jaeger, PT & Bertot JC. 2010. Transparency and technological change: ensuring equal and sustained public access to government information. *Government Information Quarterly* 27:371–376.

- Jaeger, PT & Thompson, KM. 2003. E-government around the world: lessons, challenges, and new directions. *Government Information Quarterly* 20(4):389–394.
- Jaeger, PT & Thompson, KM. 2004. Social information behavior and the democratic process: information poverty, normative behavior, and electronic government in the United States. *Library and Information Science Research* 26(1):94–107.
- Jebali, H. 2008. E-government readiness in Tunisia. European Mediterranean Conference on Information Systems 1-13. Dubai, 25–26 May. <http://www.iseing.org/emcis/emcis2008/Proceedings/Late%20Breaking%20Articles-Un-refereed/Contributions/LBP%209/EMCIS%202008%20halima%20--final.pdf> (Accessed 22 December 2011).
- Keoduangsine, S & Goodwin, R. 2009. User satisfaction model for mobile e-government service. Proceeding of the 11th International Conference on Information Integration and Web-based applications & services 610-612. NY, USA. http://delivery.acm.org/10.1145/1810000/1806453/p609-keoduangsine.pdf?ip=130.37.129.78&acc=ACTIVE%20SERVICE&CFID=61635824&CFTOKEN=89047510&__acm__=1319114806_1aebac55f129ce98b4a81c2edb5512c0 (Accessed 20 December 2011).
- Kolsaker, A & Lee-Kelly, L. 2008. Citizens' attitudes towards e-government and e-governance: a UK study. *International Journal of Public Sector Management* 21(7):723–738.
- Kumar, V, Murkeji, B, Butt, I & Persaud, A. 2007. Factors for successful e-government adoption: a conceptual framework. *The Electronic Journal of E-government* 5(1):63–76.
- Layne, K & Lee, J. 2001. Developing fully functional e-government: a four-stage model. *Government Information Quarterly* 18:122–136.
- Liebenau, J. 2010. *Achievements in e-government*. In Organisation for Economic Co-operation and Development, (corp. ed.) *Progress in public management in the Middle East and North Africa*. Paris: OECD, 187–208.
- Liou, KT. 2008. E-government development and China's administrative reform. *International Journal of Public Administration* 31(1):76–95.
- Lyons, D. 2009. A decade of destruction. *Newsweek*. <http://2010.newsweek.com/essay/a-decade-of-destruction.html> (Accessed 29 December 2010).
- Mao, E & Palvia, P. 2008. Exploring the effects of direct experience on IT use: an organizational field study. *Information & Management* 45(4):249–256.
- Means, G & Schneider, D. 2000. *Meta-capitalism: the e-business revolution and the design of 21st century companies and markets*. New York: John Wiley & Sons.
- Missingham, R. 2008. Access to Australian government information: a decade of change 1997–2007. *Government Information Quarterly* 25:25–37.
- Mossenburg, KTC & Stansbury, M. 2003. *Virtual inequality: beyond the digital divide*. Washington: George Washington University Press.
- National Computer Board. 2003. ICT penetration within the Mauritian society. <http://ncb.intnet.mu/mitt/ministry> (Accessed 6 December 2011).
- Netshitenzhe, TE. 2011. Information communication technology in African development. In Tarrosy, I., Szabo, L & Hyden, G (eds). *The African state in a changing global context: breakdowns and transformations*. New Brunswick & London: Transaction Publishers, 49–56.

- Norris, D & Moon, M. 2005. Advancing e-government at the grassroots: tortoise or hare? *Public Administration Review* 65(1):64–75.
- Ping, Z, Aikman, S & Heshan, S. 2008. Two types of attitudes in ICT acceptance and use. *International Journal of Human-Computer Interaction* 24(7):628–648.
- Porter Research. 2002. The second annual report into key government web sites. www.porter-research.com/govt2002.html (Accessed 21 December 2011).
- Rorissa, A & Demissie, D. 2010. An analysis of African e-government service website. *Government Information Quarterly* 27:161–169.
- Sadok, M & Djemaiel, Y. 2007. Leading factors to assess and conduct effective e-government deployment: modeling analysis and practice. Article presented at the 3rd International Conference on E-government. Reading: Academic Conferences Limited, 233–241.
- Salem, F & Jarrar Y. 2008. Failed revolution? Exploring e-government barriers in the Arab States. *Proceedings of 4th International Conference on e-Government* (2):363–369.
- Singh, AK & Sahu, R. 2008. Integrating internet, telephones, and call centers for delivering better quality e-governance to all citizens. *Government Information Quarterly* 25:477–490.
- Thomas, JC & Streib, G. 2003. The new face of government: citizen-initiated contacts in the era of e-government. *Journal of Public Administration Research and Theory* 13(1):83–101.
- United Nations. 2008. E-government survey: from e-government to connected governance. New York: UN. <http://unpan1.un.org/intradoc/groups/public/documents/UN/UNPAN028607.pdf> (Accessed 11 July 2010).
- United Nations. 2010. E-government survey: from e-government to connected governance. New York: UN. <http://unpan1.un.org/intradoc/groups/public/documents/UN/UNPAN028607.pdf> (Accessed 11 July 2010).
- Waema, T & Adera, EO. 2011. *Local governance and ICTs in Africa: case studies and guidelines for implementation and evaluation*. UK: Pambazuka Press.
- Wangpipatwong, S, Chutimaskul, W & Papasratorn, B. 2008. Understanding citizens' continuance intention to use e-government website: a composite view of technology acceptance model and computer self-efficacy. *The Electronic Journal of e-Government* 6(1):55–64.
- Yang, K & Rho, S. 2007. E-government for better performance: promises, realities and challenges. *International Journal of Public Administration* 30(11):1197–1217.