IRIE
International Review of Information Ethics Vol.7 (09/2007)

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The Nature and Accessibility of E-Government in Sub Saharan Africa

Abstract:

Electronic government (e-government) is a phenomenon that is linked to the information society and the advantages associated with it. E-government allows government departments to network and integrate their services using information and communication technologies (ICTs) in order to improve service delivery and enhance the relationship between the government and the public. The major ingredients of e-government are infrastructure, human resources and information. The reality in Sub Saharan Africa (SSA) is that all these ingredients are insufficient. The ICT infrastructure is not widely available to rural populations. In most cases, both government officials and the people who may want to use government services online lack basic skills. Government information is not properly organized as records management systems in many countries are collapsing.

Agenda

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ISSN 1614-1687

Background and introduction

Information and communication technologies (ICTs) have changed the process of governing in the world. Power relations between governments and the governed have been transformed from being mainly vertical and hierarchical and structured along rigid and well-defined departmental boundaries to being horizontal, networked and participatory. According to Manuel Castells:[1]

> *We are living through one of those rare intervals in history. An interval characterized by the transformation of our "material" culture by the works of a new technological paradigm organised around information technologies.*

Information technologies have brought about an epoch in history that has been described using labels such as the network age,[2] information society and knowledge economy.[3] Governments in the developed world have responded to the opportunities offered by the information society to offer value-added services to their citizens through electronic government (e-government).

However, countries in Sub Saharan Africa (SSA) have not adequately restructured public bureaucracies in response to the demands of the information society. Many governments are still hierarchical and lacking accountability and transparency. Public bureaucracies still enjoy the monopoly of power and authority. Elected officials rarely relate closely with the electorate, and only consult with them when they need their votes after every four or five years. Government information systems are still mainly manually operated and paper-based.

The situation in SSA is compounded by the fact that some bureaucrats and politicians view the ICT revolution as a "highly political affair and not a technical challenge".[4] There is need for change management and the change of the mindsets of many governments in SSA if e-government initiatives were to succeed. Governments in many developed countries shifted from being public bureaucratic-oriented and unrepresentative to being citizen-oriented as a result of the challenges and opportunities posed to government processes by the information revolution. They have taken advantage of the information "revolution" to make government processes, services and information available online in an interactive and open manner. That response has been characterized as e-government.

E-government promotes a better life characterized by representative and participative democracy, transparent, open and collaborative decision making, close relation between government, business and citizens, enhanced service delivery, new infrastructure and info-structure, integrated and seamless government services that cut across departmental boundaries and providing a convenient and timely one-stop service to the citizens, and equity in the provision of government services.[5,6] Put differently, e-government has a possibility of increasing honesty, efficiency and effectiveness, accountability and participatory democracy in the interaction between the government and the citizens.

Many governments in SSA recognize the potential benefits they can get from the information society and knowledge economy that is driven by ICTs. However, there are factors linked to the infrastructure and info-structure which inhibit their fully participation in the information-intensive society that exploits new archetypes of knowledge creation and distribution.

Defining e-government

The definitions of e-government abound.[7,8,9] Table 1 at the appendices depicts a variety of definitions that have been proposed. The twelve definitions converge around the use of technology and the provision of service delivery in the conduct of government business. Although e-government is often defined as "online government" or "Internet-based government," many non-Internet "electronic government" technologies such as telephone, fax,

[1] Castells, 1996, 29.

[2] Castells, 2001.

[3] Heiskanen and Hearn, 2004.

[4] Wilson III, 2004, 6.

[5] Lenihan, 2002.

[6] Zakareya, Zahir and Sarmad, 2004.

[7] Curtin, Sommer and Vis-Sommer, 2003.

[8] Oliver and Sanders, 2004, 5, 2.

[9] Yong and Hiap Koon, 2005, 11.

short message service (SMS), multimedia messaging service (MMS), wireless networks, Bluetooth, television and radio-based delivery of government services can be used in the context of e-government.[10,11]

From the definitions in Table 1, we may characterize e-government as an innovative attempt to take advantage of ICTs to facilitate the citizens' access to government information and services in order to support social, economic and political development, improve the quality of public services, and provide an avenue for citizens to interact with government institutions and processes in a democratic, transparent and equitable way.

Drivers of e-governance

The major drivers of e-government have been sketched as technological,[12,13,14] organisational and environmental.[15] Technology should not be emphasized at the detriment of other factors such as politics, legal frameworks and the environment. Technological determinism does not fully explain the evolution of e-government. While technological progress in government, ITC infrastructure and available ICT expertise may influence the implementation of e-government, the support and active commitment of influential politicians may play a significant role in promoting e-governance "buy in".[16] According to Ernest Wilson III, if politics is wrong then the other major drivers of e-government will not work. Leadership should be committed to "press changes in the face of institutional rigidity, technological backwardness, and political resistance".[17]

SSA leaders have not shown full commitment to improve the ICTs infrastructure in order to transform government processes. The adoption of the African Information Society Initiative in 1996 held hope for Africa.[18] The initiative aimed at providing an action framework to build Africa's information and communication infrastructure, but little progress was witnessed due to lack of resources and political will. Perhaps, SSA should pin its hopes on the New Partnership for Africa's Development (NEPAD) which partly aims at championing ICT development in Africa.

E-government can be implemented successfully if it is regulated by a legal framework.[19] Legal issues revolve around cyber-security, digital signatures and personal data protection and confidentiality. Digital signatures should be recognised by the law so that they have the same integrity as paper-based ones. Laws limiting the government's power vis-à-vis the individual in terms of the control of personal information should be passed. SSA has been very slow in enacting privacy laws and access to information legislation. Principles of fair information practices and data protection laws are not prevalent in SSA. Citizens may not be confident to participate in e-government programmes and trust the system if their privacy is not guaranteed.

Models of e-government

Studies on electronic government have been definitional, evolutionary and stakeholder-oriented.[20] Evolutionary studies focus on what Layne and Lee refer to as "stages of growth" models for fully functional e-government.[21] The model-based paradigm has dominated the theoretical framework used in e-government research.[22] Although, these models appear to be mechanistic in approach, they provide a useful tool to evaluate the development of e-government in a given context. A summary of some of the stage-models presented in Table 2 at the appendices is given in the following texts.

Models used to depict e-government suggest that there are a number of distinct phases in the development of e-government. [23,24,25,26,27,28,29] There

[10] Anttiroiko and Malkia, 2006.

[11] Heeks, 2004.

[12] Culbertson, 2004, 59.

[13] Hai Suan, 2005, 450.

[14] OECD, 2000.

[15] Zakareya, Zahir and Sarmad, 2004.

[16] *Ibid*.

[17] Wilson III, 2004, 13.

[18] African Information Society Initiative, 1996.

[19] Hai Suan, 2005, 450.

[20] Gil-Garcia and Martinez-Moyano, 2007.

[21] Layne and Lee, 2001.

[22] Heeks and Bailur, 2007.

[23] Elmagarmid and McIver, 2001.

is limited Internet presence in the first phase of the development of e-government, and information is static and basic with a one way interface between citizens and the government. Angola, Botswana, Burundi, Cape Verde, Central African Republic, Ethiopia, Gabon, Gambia, Guinea, Lesotho, Madagascar, Malawi, Mali, Niger, Seychelles and Togo are becoming e-government players and they are estimated to be at this stage.[30]

Dynamic and enhanced online information is made available to the citizen during the second stage, but the communication is still mainly one way.[31] Internet portals are designed to integrate government activities and processes to facilitated online interaction between the citizens, business and other stakeholders. Benin, Burkina Faso, Cameroon, Cote d'Ivoire, Ghana, Kenya, Mauritania, Mozambique, Namibia, Nigeria, Rwanda, Senegal, Sierra Leone, Swaziland, Tanzania, Uganda, Zambia and Zimbabwe appear to be at this stage.[32]

The third phase provides more interactive interfaces between all stakeholders. At this stage, e-government integrates "the complete range of government services, provides a path to them that is based on need and function, not on department or agency".[33] For instance, citizens may be able to register a birth or death, apply for a social welfare grant, pay taxes, access government legislation and find information on activities of their representatives in parliament and local government without having to leave their homes and offices. Mauritius and South Africa are believed to be reaching this stage. For instance, citizens can file income tax returns interactive online systems. However Internet access is still beyond the reach of many citizens in these countries.

Although the fourth phase is an improvement on the third one, it offers more customized and secure services as there is provision for passwords and other security features. All the stakeholders begin to realize the benefits of e-government such as fostering democratic processes, promoting accountability, increasing citizen participation and engagement and delivering of efficient and effective government services. Some models go further than four phases,[34] however, the first four stages seem to provide the fundamental features of the evolution of e-government in varying details and complexity. The other models that go further than four phases offer some variant on the four-phase "web development stage-model". No country has achieved the fourth stage of e-government development in SSA.

Using the framework given above and the 2001 United Nations e-government index which classified countries as having high e-government capacity with a score of 2.00-3.25, medium e-government capacity (1.60-1.99), minimal e-government capacity (1.00-1.59) and deficient e-government capacity (below 1.00) it is apparent that more than 60% of the countries in SSA have a score below 1.00.[35] Some countries might have moved steps closer to e-government in the interim, but the conclusion that e-government is still in infancy in SSA is inescapable.

Many government websites are not fully functional and they are populated with information that does not enhance service delivery and participatory democracy. A fully functional e-government website should have an e-participation framework which provides e-information on policies and programmes, budgets, laws and regulations, e-consultation mechanisms and tools, and e-decision making.[36] Governments with an e-participation framework are participatory and inclusive.[37] In many instances citizens are still obliged to visit government offices even if they may download certain documents from government portals as they may not be processed online. The possibility of coming face-to-face with the bureaucratic red tape practices and an odd

[24] Gil-Garcia and Martinez-Moyano, 2007.

[25] Layne and Lee, 2001.

[26] Sahraoui, 2007.

[27] Symonds, 2000.

[28] United Nations, 2002.

[29] Watson and Mundy, 2001.

[30] Department of Economic and Social Affairs, 2003.

[31] United Nations, 2002.

[32] Gil-Garcia and Martinez-Moyano, 2007.

[33] Symonds, 2000.

[34] See, for example, Gil-Garcia and Martinez-Moyano, 2007 and United Nations, 2002 in Table 2.

[35] United Nations, 2002.

[36] Department of Economic and Social Affairs, 2003.

[37] *Ibid.*

inefficient and corrupt government official still exist in many countries in SSA.

E-government is attainable: lessons from elsewhere

Countries such as Canada, Singapore and New Zealand are among the top-twenty leading countries in relation to e-government.[38,39,40] In Singapore, for example, citizens can pay parking tickets, job-seekers can search for employment, people can change their postal addresses, debtors can petition for bankruptcy, and public trustees can file an application for estate administration using opportunities provided by e-government.[41] Singapore's e-government project was built on a strong ICT foundation and a dynamic e-Government Action Plan.[42] Canada's e-government project tapped on the high level of connectivity and high ICT literacy or e-literacy levels of Canadians.[43]

In New Zealand, it was driven by a central coordinating organization, the E-Government Unit (EGU) which:[44]

- developed an e-government strategy;
- formulated standards and guidelines;
- provided leadership to facilitate the achievement of the e-government vision and strategy;
- identified and coordinated opportunities for collaboration across government departments; and
- monitored progress towards achieving e-government.

It is evident from these examples that e-government is attainable. The implementation of e-government programmes mainly hinges on a sound ICT infrastructures, clearly defined e-government strategy and vision, strong government commitment, information literacy and e-literacy, and connectivity.

Unfortunately for SSA, many countries lack an e-government strategy and vision. Many citizens are IT-illiterate and the quality of government information is poor. Standards to ensure interoperability and portability of government information systems are inadequate. Human resources are scarce due to the brain drain and lack of capacity building programmes. Many governments do not have laws, policies and standards for privacy protection and information access. Many government websites do not have a privacy policy. Concerns about privacy and confidentiality impede the development of e-government. Governments departments to coordinate and oversee the implementation of e-government projects are absent in many countries in SSA, and they are grossly under resourced in instances where they exist.

Challenges facing SSA in the road to e–government

Seventeen challenges and opportunities of e-government implementation have been outlined in the literature.[45] They include infrastructure development, law and public policy, digital divide, e-literacy, accessibility, trust, privacy, security, transparency, interoperability, records management, permanent availability and preservation, education and marketing, public sector and private sector partnerships, workforce issues, cost structures and benchmarking.[46] The next texts collectively deal with some of these overlapping challenges.

Access to information and telecommunication technologies in Africa

ICTs provide information and services to the people cheaply, efficiently and effectively.[47,48,49] The use of

[38] Curtin, Sommer and Vis-Sommer, 2003, 8.

[39] Department of Economic and Social Affairs, 2003.

[40] United Nations, 2002.

[41] Henderson, 2002.

[42] Lim and Low, 2003, 21.

[43] D'Auray, 2003, 33.

[44] Boyle and Nicholson, 2003, 90-1.

[45] Information for Development Program (*info*Dev), 2002.

[46] *Ibid*.

[47] Elmagarmid and McIver, 2001.

[48] Henderson, 2002.

ICTs can "systematize the transparency of governance" by "providing relevant and timely information in large quantities".[50] Although the implementation of e-government programmes involves the use of many ICT applications, it is the Internet that is the most widely recognized and identifiable component driving e-government.[51]

The lack of telecommunication infrastructure in Africa has seriously restricted the use of the Internet and the adoption of e-government in SSA. Furthermore, Internet connection charges are beyond the reach of the average citizens in many countries in SSA. One in 40 people have a fixed line, one in 130 has a PC and one in 160 uses the Internet in SSA.[52]

Most of the existing telecommunications infrastructure does not reach the bulk of the population. In fact, Tokyo "has more telephone lines than sub-Saharan Africa put together".[53] Fifty per cent of the available lines are concentrated in the cities, where only about 10 per cent of the population lives. ICT foundation is weak and there is no universal access to the Internet. Irregular or non-existent electricity supplies are a major barrier to use of the ICTs, especially outside the major towns. Power outages are also experienced. For instance, a cyber café had to close shop in Kenya as result of unreliable power supply.[54]

Bandwidth is also a problem is some countries in SSA. For instance, the World Bank Report on "African Region Communications Infrastructure Programme" of 2007 pointed out that the east and southern African region suffers bandwidth deficiency as it accounts for less than one per cent of the world's international bandwidth capacity.[55] Limited connectivity and costly access hinders the potential of SSA to utilize ICTs to promote social participation and improve government efficiency and transparency.

Inequitable access to ICTs such as personal computers, Internet, telephones, cable and other Internet-related technologies by individuals or groups of people in their countries in order for the citizens to benefit from the government processes driven by ICTs is another challenge facing governments in SSA. The disparities related to accessing ICTs have been characterized as the "digital divide". The level of e-government readiness in a country is partly measured by access to ICTs. The United Nations E-government Readiness Index of 2003 showed that South Africa was the only country in SSA that was among the top 100 countries in relation to e-readiness.[56] The index of United States, the leading country in the world, was 0.927 and South Africa was pegged at 0.515. The fifth country in SSA was Namibia with a ranking of 0.34. South Africa remained among the top 100 countries in the Economist Intelligence Unit's e-readiness ranking of 2006 and it was joined by Nigeria.[57]

Information literacy and e-literacy

Information literacy is fundamental to the use of information resources in the knowledge age.[58] Information literacy refers to the person's ability to "recognise when information is needed and have the ability to locate, evaluate and use effectively the needed information".[59] Literacy today also means ICT literacy and skills.[60] ICT literacy among the citizens has significant role to play implementing e-government as it is fundamental to the ability of citizens to access and use electronic information. Information literacy policies are deficient and literacy levels are extremely low in SSA.

Information management: Achilles' heels of e-government in Sub Saharan Africa

Government's provision of access to information is the foundation of a democratic society. Information

[49] McClure, 2001.

[50] Kim *et al.*, 2005.

[51] United Nations 2002.

[52] African Internet-a status report, 2002. The situation has not changed drastically ever since the report was compiled.

[53] Mbeki, 2000.

[54] Kathuri and Nyasato, 2007.

[55] World Bank, 2007b.

[56] Department of Economic and Social Affairs, 2003.

[57] Economist Intelligence Unit, 2006.

[58] Braaksma, 2004, 151.

[59] American Library Association, 1989.

[60] Department of Economic and Social Affairs, 2003.

partly facilitates decision making, citizen oversight of government departments and their decisions, and citizen debate on policy issues and policy formulation.[61] Information management in general and records management in particular, is a cornerstone to government information systems and effective access to information.

The advent of ICTs has brought about a paradigm shift in the production of government information. Government processes are mainly generating electronic records as evidence of government's conduct of business. This is all happening at time when many records managers in SSA do not have the necessary professional capability to deal with electronic records. Weak institutional capacity and the absence of comprehensive records management policies, guidelines and practical standards have aggravated the situation.[62,63] The management of e-records will continue to pose the greatest challenge to the implementation of e-government until the capacity of SSA to handle e-records is enhanced. Building an e-government environment which provides authentic and reliable information for decision making and holding the government accountable would remain elusive if SSA does not have the "capacity to create, manage, share and use electronic information (and related technology) to improve governance as well as to sustain international trade and innovation; improve global security and support other activities in our increasingly inter-connected and inter-dependent world".[64]

Conclusion and recommendations

It is evident that e-government has the possibility of making government processes transparent accountable. However, SSA has to overcome obstacles such as the lack of infrastructure and info-structure before it can have fully functional e-government programmes. E-government "readiness strategies and programmes will be able to be effective ...only if, people at the very minimum, [had] functional literacy and education, which includes knowledge of computer and Internet use; all are connected to a computer; and all have access to the Internet".[65]

The education system should be sensitive to the challenges ushered in by e-government and come up with strategies to equip students with skills required in the e-government environment. Governments in SSA should utilize the existing information infrastructure based on libraries and telecentres rather than starting from scratch when implementing e-government programmes. These facilities are accessible to many people and some of them are close to rural populations. For instance, public libraries have become de facto e-government access points in states such as Florida in the United States.[66] What is required of governments in SSA is just to increase funding to these institutions so that they will be able to provide access to computing and Internet services to support e-government.

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[61] Eschenfelder and Miller, 2007, 83.

[62] Ngulube and Tafor, 2006, 58.

[63] Wamukoya and Mutula, 2005, 72.

[64] Lipchak and Donald 2003, 2.

[65] Department of Economic and Social Affairs, 2003.

[66] Bertot *et al.* 2006.

government. *New York: The Haworth Political Press. pp. 89 - 105.*

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Appendices

Source	Definition
1	The use of any and all forms of information and communication technology (ICT) by governments and their agents to enhance operations, the delivery of public information and services, citizen engagement and public participation, and the very process of governance.[67]
2	A way to strengthen the flow of information to citizens, and to improve citizen access to government programs and services. There is also an assumption that the resulting transformation will make government more efficient, more responsive, more accountable, and perhaps even more democratic.[68]
3	The use of information and information technologies in government settings.[69]
4	The use of information and communication technologies (ICTs) to improve the activities of public sector organizations.[70]
5	Is about facilitating the life of citizens and businesses by increasing the efficiency, quality and user-friendliness of government, as well as improving governance.[71]
6	Refers to government's use of technology, particularly web-based Internet applications, to enhance the access to and delivery of government information and service to citizens, business partners, employees, other agencies, and government entities.[72]
7	The response by government to the economic and socials demands of an information society and a knowledge-based economy.[73]
8	The use of ICTs to transform government by making it more accessible, effective and accountable.[74]
9	Utilizing the internet and the world-wide-web for delivering government information and services to citizens.[75]

[67] Curtin, Sommer and Vis-Sommer, 2003, 2.

[68] Gibbins, 2004, 33.

[69] Gil-Garcia and Martinez-Moyano, 2007, 266.

[70] Heeks, 2004.

[71] Liikanen, 2003, 84.

[72] McClure, 2001.

[73] Milner, 2002.

[74] Sakowicz, 2003.

[75] United Nations, 2002.

10	Is a government that applies information and communication technologies to transform its internal and external relationships.[76]
11	The use by government agencies of information technologies (such as Wide Area Networks, the Internet, and mobile computing) that have the ability to transform relations with citizens, businesses, and other arms of government.[77]
12	The use of technology by government to enhance access to and delivery of public services to benefit, business partners and employees.[78]

Table 1 Selected definitions of e-government found in the literature

[76] Department of Economic and Social Affairs, 2003.

[77] World Bank, 2007a.

[78] Yong and Hiap Koon, 2005, 11.

Source	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5	Phase 6	Phase 6
1	One-way communication	Two-way communication	Complex transactions	Integration across government processes[79]			
2	Initial presence (individual web pages with static information)	Extended presence (dynamic information with links to other government pages)	Interactive presence (portal with secure access)	Transactional presence (detailed portal providing secure electronic payments of fines and taxes)	Vertical integration (government processes and structures integrated)	Horizontal integration (government services cut across boundaries	Totally integrated presence (vertical and horizontal integration)[80]
3	Publish (using ICT to expand access to government information)	Interact (broadening civic participation in government)	Transact (making government services available online)[81]				
4	Catalogue (downloadable forms)	Transaction	Vertical integration (systems hierarchically	Horizontal integration (systems integrated)[82]			

[79] Elmagarmid and McIver, 2001.

[80] Gil-Garcia and Martinez-Moyano, 2007.

[81] Information for Development Program (*info*Dev), 2002.

[82] Layne and Lee, 2001.

			connected with limited functionalities				
5	Information in brochure-like form	Citizens use technology to interact with government (one-way interaction with government)	Online transactions and sending of tender information	Integrated portal for all government services and information[83]			
6	Emerging presence (static organizational information)	Enhanced presence (dynamic information and publications)	Interactive presence (access to government institutions and services)	Transactional presence (complete and secure transactions)	Seamless or fully integrated (services fully available)[84]		
7	Initiation	Infusion	Customization[85]				

Table 2 Models of the development of e-government found in the literature

[83] Symonds, 2000.

[84] United Nations 2002.

[85] Watson and Mundy, 2001.