



# Towards a Model for Implementing Local E-government in Uganda

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## **Abstract**

The need to implement local e-government for improved service delivery is well documented and various models have been proposed for this important task. However, existing models are known to be suited for implementing e-government in the developed countries at the national level. In the developing countries, the technical and non-technical infrastructures are not as mature as those of developed countries. Requirements for local e-government also differ from those at the national level due to differences in technical, social and political factors, necessitating customized local e-government implementation models. In developing countries, local e-government implementation is also constrained by lack of information about its requirements, with the possible risk of duplication of national experiences and knowledge. The need therefore remains, to determine requirements and customize existing e-government implementation models to suit local governments in developing countries. This paper reports on a study that developed a model for implementing local e-government in Uganda, as an example of a developing country. The model which builds on an existing one defines dimensions of financial constraints, ICT infrastructure, sensitization, training and social political factors as pre-requisites for successfully implementing local e-government projects in Uganda.

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## Introduction

E-government brings benefits to citizens of both developed and the developing countries. It enables them to collaboratively participate in decision and policy making, and to bridge the interaction gap between ordinary citizens and government. This leads to savings on costs for both governments and citizens and facilitates increased transparency and reduced corruption in public service delivery [Bwalya, 2009]. E-government practices are therefore a means for public administrations to improve their performance by increasing the efficiency of management processes and reducing costs in the provision of public services. It is applied across a wide range of services including city planning, social services administration, physical or information infrastructure management, emergency management, public records and archives, community or economic development, health care, education and property assessment.

Local e-government is part of e-government. It enables administrations to extend services to local communities by providing space and online means for people to get together and communicate in a non-commercial environment in ways that are more relevant to government. It also provides government agencies with the opportunity to offer new and enhanced services to the public, to increase the involvement of communities in policy making and improved service provision [Carbo et al., 2005]. Although e-Government is a reality at all public organization levels, it has the biggest impact at a local level where between 50% and 80% of the citizen's interactions with public bodies occur [Heeks, 2006]. Thus Local e-Government is vital as it empowers managers with the software to integrate changes in the internal workflow that makes municipal administrations run smoothly [Cortés et al., 2006].

Despite its importance, the implementation of local e-Government has remained problematic and constrained in developing countries. This is because Local governments often lack independent decision making powers in the area of e-Government, and often rely on funding from central governments to implement new initiatives [Shackleton and Dawson, 2007]. There is also lack of information regarding e-Government implementation at the local level since most of the current e-Government research and designed models have focused on national and state-level e-Government practices with few investigations focused on the local government [Capgemini, 2007]. The need

for local government agencies to interact with other government agencies to deliver their services is yet another impediment to local e-Government implementation for a developing country [Benamou, 2005].

For the successful implementation of local e-government in developing countries, the gap therefore remains between current e-government implementation models design and the real conditions on the ground. This according to Heeks [2003] 'Archetypes of failure' is referred to as the Design-reality gap. The existing International e-government implementation models are focused at national and state level and are more suited to the developed countries with up-to-date technology, and more non-technical issues such as concentration on public awareness and e-readiness than developing countries [Zarei et al., 2008].

This study aimed at developing a model for local e-government implementation in Uganda, as an example of a developing country. Questionnaires in a descriptive field study were used to collect requirements for local e-government implementation. A model defining dimensions of financial constraints, ICT infrastructure, sensitizations, training and social political factors as pre-requisites for implementing local e-government in Uganda was developed. The model describes requirements that are critical to successful implementation of local e-government in Uganda. It therefore has potential to guide successful local e-government project implementation in Uganda and other developing countries with similar contexts. The model is generic and can therefore be applied to other developing countries. Furthermore, understanding of requirements for local e-government projects contributes to extending existing e-government implementation models.

The rest of this paper is organized as follows. Section two discusses e-government and its implementation models and their shortcomings. Section three explores local e-government in Uganda and its shortcomings. Section four presents the research questions for this study. Section five explains the methodology used to answer the research questions and derive a new model for local e-government implementation as an extension of existing ones. The new model is then presented. Conclusions are made in section six.

## **E-Government Implementation**

E-government uses Information and Communications Technologies to build information systems for improved efficiency and effectiveness in service delivery. It ensures accountability of government to citizens using applications like the internet, websites, mobile phones, telegrams, telex and fax messages [Eilu, 2009]. Using E-government, employees are provided with an effective means of sharing information and exchanging knowledge. It enables government agencies to talk, listen, relate and continuously communicate with citizens. This helps to support accountability, democracy and bring improvements in public services. E-government systems help to deter corruption and

tribalism in the public sector since every action taken involves a machine which is difficult to corrupt [Al-Shehry et al., 2006].

### **The State of E-government Implementation in Sub Saharan Africa**

The state of e-government development in Africa varies from country to country. In Zambia e-government is still at the infancy stage of implementation without a dedicated strategy in place [Bwalya and Heally, 2010]. Zambia has a deficiency of e-government capacity with the index of 0.76, below many African countries like Zimbabwe, Congo and South Africa [UN Report, 2008]. The challenges to e-government development in Zambia are; resistance from both employees and citizens, lack of ICT infrastructure for accessibility to e-government projects, lack of IT skills among human resources especially in rural areas, and overreliance on donor support to fund e-government development [Bwalya, 2009].

Based on the e-government indices, Botswana is currently considered one of the ICT usage power houses in sub Saharan Africa [Bwalya, 2009]. Despite such gains, it still lags behind other countries like Tanzania, South Africa and Lesotho, due to lack of a formal e-government strategy. It also has a problem of lack of trust by both the citizens and employees in the e-government technology employed. Thus, citizens are still reluctant to fully utilize the e-government services. There is also a problem of limited levels of education. This makes it hard for people to access e-government information and exchange views with government officials when it comes to decision making. There is also the problem of ignorance of the importance of e-government to citizens due to limited sensitization, promotions and awareness campaigns.

In Kenya the e-government development effort is constrained by the lack of government ICT policy, poor information infrastructure, entrenched graft, the digital divide, and inadequate human skills. The reluctance to share information has resulted in policies that deny access to information and the creation of government ministry websites with content of little value to the public. Low IT literacy in the country has slowed down the process of e-government in Kenya. There are inadequate qualified ICT staff and training schemes to serve the country. The existing training opportunities are limited and costly for the ordinary citizen [Jaeger and Thompson, 2003]. There is a problem of a mismatch between the current and the future systems resulting from the large gap between physical, social, cultural, economic and other contexts between the software designers and the place in which the system is being implemented [Kamar and Ongo'ndo, 2007]. Financial constraints and mixed government priorities have also slowed down the rate at which e-government is introduced in Kenya.

In Uganda, the e-government strategy aims at delivering high-quality customer-centric and performance-driven services to its customers. The expectation is that e-Government will contribute to Uganda's economic and social development, as well as the transformation into a competitive, innovative knowledge society [Rwangoga and Baryayetunga, 2007]. The challenges to implementing e-government in Uganda are, the lack of adequate resources to dedicate to ICT programs, a limited effort at reviewing

business processes and rearrangement of staffs to promote efficient application of electronic Government processes and applications, lack of coordination and training across the government, lack of staff training, poor connectivity of networks and low appreciation of integrated information systems [ibid].

Generally, implementing e-government in developing countries faces problems of: 1) limited ICT infrastructure especially in the remote rural areas, 2) poor non-user friendly design of websites for e-government due to limited computer literacy levels, 3) low education levels have also increased the rate of unwillingness to use e-government because the content is mainly presented in English other than common local languages, 4) inadequate human resource base trained to handle e-government projects to produce efficient public service delivery, 5) donor funding strongly affects the sustainability of the developed projects in the aftermath of project sponsorship from the donors, 6) lack of a formal e-government strategy, 7) Ignorance on the importance of e-government to citizens due to limited sensitization, promotions and awareness campaigns [Bwalya, 2009]. However, on the other side government agencies have the political will and intentions to implement e-government because they understand its benefits to their country.

### **E-government Implementation Models**

Many countries using different models have attempted to implement e-government as the most fundamental infrastructure for programs that leverage Information Technology in facilitating organizational change [Zarei et al., 2008]. Based on the complexity and level of integration, Siau and Long [2004] provide a taxonomy of the different stage models of e-government implementation. The taxonomy is based on the e-Government implementation models of: i) Hiller and Be' langer [2001]; ii) Layne and Lee [2001]; iii) Moon [2002]; iv) the United Nations [UN] web Presence Measurement Model [2001]; v) Gartner Group [Baum, and Maio 2000]; and vi) Deloitte and Touché [2001]. Some of the stages for the different models are similar while others are different as described in the following subsections.

**The UN web Presence Measurement Model [2001]** provides an efficient web-based public service whose implementation has five stages of i) emerging, ii) enhanced, iii) interactive, iv) transactional, and v) seamless web presence. The emerging web presence has a dormant website for posting information on different activities. The enhanced web presence stage creates and links together websites to enable citizens access information across ministries. The web sites provide dynamic, specialized, and regularly updated information. The interactive web presence is a two way communication stage where citizens' and government can exchange information easily. At this stage, government web sites act as a portal to connect users and service providers. At the transactional stage buying and selling of products take place online. At the integrated presence stage, governments utilize a single and universal website to provide a one-stop portal in which users can immediately and conveniently access all kinds of available services.

**Gartner's Four-stage Model** [Baum, and Maio 2000] has four stages of e-government implementation namely: i) web presence, ii) interactive stage, iii) transaction stage, and iv) transformation stages. The presence stage is where a website enables government to offer static information to citizens. The interactive stage is where the website has search ability to enable citizens interact with the government. The transaction stage enables exchange of services like making payments and receiving services online. The transformation stage is the online execution of public services requiring integration of different ministries to provide all kinds of information to citizens in one place.

**Layne and Lee's Four-stage model [2001]** has four model stages of catalogue, transaction, vertical and horizontal integration. At the catalogue stage, static information is posted on the government website for public viewing, but citizens can neither reply nor make any comments. The major task of the administration is the management of the content published on the web. The transaction stage enables citizens to have two way communication, and they can read, download forms, fill and submit. The vertical integration stage is where different government ministries and departments are linked or connected together to offer seamless information to citizens, employees and government agencies. It focuses on integrating government functions at different levels, such as those of local governments and state governments. The target is to integrate central agencies with regional and local offices within similar functionalities. Horizontal integration involves different departments and sections of different ministries to enable easy exchange and communication of information. The outcome of horizontal integration is an automated process oriented back-office organization able to interact within different offices in different regions and countries and to share resources.

**Deloitte and Touché [2001]** proposed a six-stage model consists of: i) information publishing, ii) official two-way communication, iii) multi-purpose portals, iv) portal personalization, v) clustering of common services and vi) full integration and enterprise transaction. Information publishing is where governments provide users with increased access to information on a website. Official two-way communication stage is where interaction between government agencies and citizens are made possible through use of government websites using information and communication technologies such as digital signatures and security keys. A multi-purpose portal provides information concerning different departments to citizens using a single portal. Portal personalization is where citizens can customize the portals to their needs. Clustering of common services is where governments encourage collaboration and reduce on the mediators purposely to provide a unified service. Full integration and enterprise transaction offers sophisticated and personalized services to customers basing on their tastes and preferences.

**Hiller and Be' langer [2001]** identify five stages for e-government implementation as information stage, two-way communication, transaction, integration and participation stage. The information stage is where basic information is put on the government website for public viewing. Two-way communication is where citizens are able to interact with government agencies through viewing, downloading, filling and resubmitting forms.

Transaction stage enables citizens to carry out online transactions and applications. Integration stage is where all government websites are integrated horizontally and vertically to enable citizens access information from different ministries and departments at the same time and in one place. Participation stage is where one can vote online or file comments online. This stage requires a very high level of security and privacy and is in its infancy stage throughout the world.

**Davison et al. [2005]** argue for e-government implementation in five stages of web presence, interaction, transaction, transformation and e-democracy. The first three stages aim at automating and digitizing the current processes while the last two aim at transforming government services. The five stages are interrelated and one leads to another though it's not a must that one has to follow the order. The stages present a development rather than a must-go-path. System complexity and integration increase with advancing stages.

**Zarei et al. [2008]** describe a nine stage model for e-government implementation in a developing country has been described by Zarei et al. [2008]. The nine stages are strategy development, building infrastructure, building trust, making a physical and electronic portal, initial interactions and stimulation, prototyping, enrichment and multi-dimensional development, integration, and development of the ICT industry. These nine stages are based on the Iranian experience.

**Siau and Long [2005]** conducted an analysis of the existing e-government implementation models in order to find commonality for the various phases. From their meta synthesis, they summarize e-government implementation into five phases of: i) Web presence for posting static information for public viewing ii) Interaction for two way communication iii) Transaction iv) Transformation for business process reengineering and horizontal and vertical integrations and v) E-democracy for online voting, polling and surveys. The models as presented above are here summarized and compared as shown in table 1 on the basis of the synthesized e-government stage models of Siau and Long [2005] and Zarei et al. [2008].

**Table 1: A Summary Comparison of the e-Government Implementation Models**

Stages	UN model [2001]	Gartner's Group	Deloittes [2001]	Layne & Lees [2001]	Hiller & Be'langer' [2001]	Zarei et al. [2008]
Web presence or catalogue						
Enhanced Web presence		X				
Interaction				X		
Transaction			X			
Transformation (vertical integration)						

Stages	UN model [2001]	Gartner's Group	Deloitte [2001]	Layne & Lees [2001]	Hiller & Be'langer' [2001]	Zarei et al. [2008]
E-democracy	X	X	X	X		X
Trust Building	X	X	X	X	X	
Employee training &	X	X	X	X	X	X
Citizen sensitization	X	X	X	X	X	X
ICT infrastructure	X	X	X	X	X	
Collaboration & partnership	X	X	X	X	X	X

Table 2.1 above reveals that none of the models caters for implementation of e-government across all national contexts and perspectives. It also reveals that based on the complexity and level of integration, the models of Hiller and Be'langer [2001], Layne and Lee [2001], the UN web Presence [2001], Gartner [Baum, and Maio 2000]. and Deloitte and Touché [2001] have similar stages with few variations. This conforms to the taxonomy for e-Government implementation as described by Siau and Long [2004]. A major variation is provided by the nine stage model of Zarei et al. [2008] developed based on the Iranian experience as a developing country.

### **A Critique of the E-Government Development Models**

Existing models for e-government implementation (EGIM) have been developed and used in the developed countries. These models are however oversimplified and are not easily applicable for e-government implementation in developing countries where the technical and non-technical infrastructures are not as mature as those of developed countries [Zarei et al, 2008]. The authors argue for the customization of the international EGIMs to suit the different contexts of the developing countries. Similarly, e-government experiences vary dramatically from one government to another, both between and within countries and there is need for country specific assessment indicators to enable cross-country comparisons by relative scores [Flak et al., 2005].

Existing EGIMs and research have been used in efforts to develop and assess e-government projects with central or national government as the unit of analysis with little regard for the local governments [Lofstedt, 2005]. They are little used in projects to assess e-government services at the local government level that has the most direct contact with the citizens and businesses and is responsible for providing a collection of basic services [Flak et al, 2005]. These models have largely been used in developed countries, and are not equally used in developing countries like Uganda. This is because, developed countries have more upto date technology than developing countries. Therefore there is need for different countries to consider requirement for e-government implementation and incorporate them in the model [Zarei et al., 2008]. In response to these shortcomings of international EGIMs Zarei et al. [2008] proposed a nine stage model of e-government development respect to the experience of Iran, a



developing country as an example of a model that may be applicable for other developing countries with some customization [ibid].

## **Local E-Government**

Local Government is an administrative body for a small geographic area, such as a city, town or state controlling a specific region, that cannot pass or enforce laws affecting a wider area. It is a governing institution with authority over a sub national territorially defined area [Hopkins, 1997]. Local government is where the majority of interaction between government and civil society occurs [Flak et al., 2005]. It only acts within powers delegated to it by directives of the higher level of government and each country has a kind of local government which differs from those of other countries.

Local e-Government is the management of all local government processes, in and outside administrative premises by deploying Intranet and Extranet applications to empower managers with proper software to achieve integration and develop changes in the internal workflow to make the city council's administration run smoothly [Cortés et al., 2006]. It is an online presence to enhance the quality, speed of delivery and reliability of services to citizens and businesses by adopting ICTs to modernize and change the way their administrations work [ODPM, 2003]. The development of local e-government projects can involve individuals from different departments within the local authority, other local authorities, regional partnerships, national projects, other public organisations and the private sector.

Local e-government provides benefits to both government and citizens like electronic voting [WITSA, 2003]. This is because e-voting is still at a local rather than central government level. Local e-government once implemented allows voters to cast their ballots in the local assembly elections from electronic voting machines. Local e-government can also help to renew local democracy by making councils more open, more accountable, more inclusive and better able to lead their communities. It enhances the opportunities for citizens to debate with each other and to engage with their local services and councils [ODPM, 2003]. It also enables employees to provide call centres to citizens in local governments. Call centres process big numbers of inquiries that were previously handled separately by respective departments in organizations. Local e-government enables municipal authorities to exercise electronic documentation management, electronic applications and electronic procurement.

Local e-government promotes change by offering citizens' access to the data held by local government. Citizens can carry out transactions with a 24-hour online service all year round. It also offers citizens the ability to access and check their personal details in the database of the local administration, providing clear, comprehensive and easy-to-access information in areas like legal residence, salary and personal details, new and removed taxable items and many others. Local e-government has the potential to help local authorities improve on their services by making them more accessible, more

convenient, more responsive and more cost effective [ODPM, 2003]. It also makes it easier to join up local services.

### **Issues for Successful Local e-government Development**

Although the concept of e-government has been in existence for long, it's majorly concentrated at the national level and is in short supply at the local level. There is lack of information regarding local e-Government. Most studies about e-Government evolution have been tailored to the national level where it is currently more concentrated, with little information focused on local e-Government [Capgemini, 2007; Gronlund, 2004]. According to Gronlund [2004], the reasons for the concentration of e-government research and projects at the national level are: i) the conflicting goals and priorities of government agencies at different levels which affect the implementation and adoption of local e-government in most developing countries Gronlund [2004], ii) Lack of independent decision making powers by local government in the area of e-Government since they rely on funds from higher levels of government to implement new initiatives, iii) Lack of staff to support Information Systems in the Local Governments since they have to compete for qualified IT professionals with the private sector, iv) fear of change by employees as they feel threatened by new web technologies, creating a resistance, v) lack of sufficient resources to invest in local e-government coupled with budget restrictions, thus making it difficult to spend optimally, vi) Staff turn-over coupled with staff restructuring that lead to loss of skilled and experienced staff in Local Governments [Ndou, 2005], vii) limited ICT infrastructure commonly experienced by developing countries also affects usage and performance of local governments [Uganda e-government, 2005], viii) Inadequate and erratic power supply in rural areas of most developing countries affect performance of local governments [Uganda e-government, 2005], and ix) the Digital Divide which is common in most developing countries.

Furthermore, while indicators of e-government at country level are widely accepted and commonly used, the presence of such standards at regional level are not widely accepted. Therefore, while at the national level, there are many theories and models for e-Government, for local e-government little research is reported [Janssen & Wagenaar, 2004; Kaliontzoglou et al., 2004; Shackleton et al., 2004; Norris, 2005].

Local governments share some of their e-Government requirements with those at the national level, including such needs as interoperability, security, and user friendliness. Besides these, local governments also have specific requirements that are either unique to their context or, because of their characteristics, demand more attention [Kaliontzoglou et al., 2004]. These include cost and resource considerations, enhanced accessibility and greater scalability due to the larger number of citizens and businesses served. The prerequisites for local e-government differ in comparison with the national e-government by way of having fewer and limited resources, which necessitates theories and models dealing with these aspects [Lofstedt, 2005].

Grabow et al. [2002] also mention the factors for the successful implementation of local e-government projects as: i) the need to adapt and fit the guiding principles

and strategy for local e-government to those of the municipality and other central local communities, ii] top leadership and political support for local community e-government from council, iii] e-government is challenged by the financial shortages of towns and cities, and requires that priorities be set for normative, strategic and operational control, iv] integration of e-government requires administrative processes at the local, central or federal level to be seamlessly interlinked without discontinuity of media regardless of where the responsibilities lie,; v] motivation and competence of the various groups of stakeholders - for the success of local e-government measures to promote competence and greater qualifications are integrated into the comprehensive strategy of local e-government, vii] staff motivation and training are therefore required for staff to actively participate in the e-government innovations; viii] compliance with the legal provisions is a basic requirement for the successful implementation of local e-government. Legal expertise needs to be integrated into its planning and implementation at an early stage [Eifert et al., 2003].

### **Local e-Government in Uganda**

In Uganda, the Ministry of Local Government [MoLG] in Uganda is responsible for supporting and ensuring the efficient and effective operations of Local Governments through proper management and coordination of the Decentralization process [Rwangoga & Baryayetunga, 2007]. After recognizing the urgent need to harness the benefits of e-Government services, the (MoLG) embarked on the harmonization and coordination of e-Government initiatives. Some of those initiatives are the Local Government Information Communication System (LOGICS) and Local Government Financial Information Analysis System (LGFIAS).

LOGICS is an e-Government application chosen for developing national output and outcome indicators along the e-Government domains of e-administration, e-services, e-citizen and e-society. LoGICS has three subsystems of Monitoring and Evaluation, Compliance Inspection and the Computerized Software Sub-system. LoGICS is a multi-sectoral information system covering all sectors in Local Government including: Education, Health, Water, Roads, Prisons, Police, Production, Planning, Finance and Administration, Council and Social Services to mention but a few. It was developed to monitor and evaluate service delivery in Local Governments and also to disseminate the Local Government service delivery and compliance reports to various stakeholders involved in the implementation, via an online [internet-based] One-stop Information Resource Centre facility located at the Ministry of Local Government headquarters. It covers areas like service delivery, area profile, compliance inspection, resource usage, availability, activity planning and completion. However, though LoGICS was put in place to perform the above mentioned tasks, it has not been successful due to a number of weaknesses like i) inadequate capacity of ICT skills at the Local Governments to handle information systems, ii) limited ICT infrastructure, iii) inadequate LoGICS rollout and follow up by the parent Ministry, iv) inadequate and erratic power supply, v) lack of ICT staff to support Information Systems and ICT equipment Local Governments, vi) staff

turn-over coupled with staff restructuring that led to loss of skilled and experienced staff in Local Governments, vii) attitude, resistance and fear of change, viii) inadequate funding in Local Governments in using LoGICS for planning and carrying out their duties and [ix] inadequate technical capacity at the Ministry of Local Governments [Rwangoga & Baryayetunga, 2007].

LGFIAS is a system for capturing all relevant financial data on revenues and expenditure for all levels of Local Governments. The system has been designed with facilities to analyse and generate in-depth reports on revenue performance, expenditure, donor funds and Central Government transfers to the Local Governments. The reports generated are used by the Local Authorities, Central Government, Development Partners, NGOs and other stakeholders for decentralized fiscal planning, policy formulation and decision making functions.

### **Challenges to Local e-government Implementation in Uganda**

E-government experiences vary between developed and developing countries and these differences are in technical, social and political factors [Flak et al., 2005]. Different countries therefore need to identify major activities required for the development of their local e-government, and incorporate them into the existing e-government implementation models to suit their conditions [ibid]. Thus the need remains, for determining requirements, analyzing and assessing conditions of developing countries in general and Uganda in particular in order to identify weaknesses, strengths, threats, and opportunities before customization of models for implementation of local e-government in Uganda.

There are differences in requirements for national and local e-government implementation. While local e-governments share some requirements like interoperability, security, and user friendliness with national e-governments, they also have specific requirements because of their characteristics including cost and resource considerations, enhanced accessibility and greater scalability due to the larger number of citizens and businesses served. The need therefore remains for empirical studies to investigate and determine requirements for local e-government implementation in Uganda. Such studies should collect, compare, and assess data about actual local e-Government to identify good and bad practices through analysis with a view to improving the development of local e-Government, given its special requirements that focus on cost, resources, and enhanced accessibility [Lofstedt, 2005].

The development and integration of ICT within Uganda's ministry of local government is uneven, with the lack of adequate resources to dedicate to ICT programs [Rwangoga & Baryayetunga, 2007]. In addition there is very limited effort to review business processes and realignment of staffs to promote efficient application of electronic Government processes and applications. Worse still, ICT investment still remains an "ad hoc" affair, with each individual Ministry seeking ICT funding to offset the minimal funding available through the governmental budgetary channels and also most installed systems are not fully being utilized. Part of the reason advanced is lack of

staff training, poor connectivity of networks is poor and low appreciation of integrated information systems [ibid].

## **Research Questions**

The literature points to a gap between the existing e-government implementation models design and the real conditions on the ground for the developed and developing countries (the Design-reality gap). The current e-government development models are more appropriate for developed countries that have up-to-date technology, and have resolved the non-technical issues of public awareness and e-readiness. E-government experiences vary dramatically, both between and within countries [Flak et al., 2005].

Motivations toward e-government implementation are essentially different in developing countries. There are fundamental differences in technical, social and political factors of various countries, which demands more customized local models [Flak et al. 2005]. The literature points to the need for different countries to identify major activities required for development of their local e-government, and then incorporate them into a national e-government development model [ibid]. The establishment of an appropriate infrastructure and technical factors are major obstacles for successful implementation of local e-government in developing countries.

The literature also points to differences in requirements for national and local e-government development. While local governments share some needs like interoperability, security, and user friendliness with national e-governments, they also have unique context specific requirements because of their characteristics including cost and resource considerations, enhanced accessibility and greater scalability due to the larger number of citizens and businesses served. The literature also points to two distinct approaches to developing e-government [Flak et al, 2005] One approach is characterized by primarily focusing on cost efficiency whereas the other is driven by a desire to offer added value to citizens. This raises the question of which approach is superior to the other in the development of local e-government. This calls for research towards investigating the different country specific drivers of e-government development. The need thus remains to determine requirements for local e-government implementation models in developing countries [Zarei et al., 2008].

The literature therefore points to the following unresolved questions for successful local e-government implementation in Uganda as a developing country: What are the requirements for a successful local e-government implementation in Uganda? Which model design best supports the implementation of local e-government in a developing country like Uganda? The study presented in this paper sought to provide answers to these questions above and proposed a model for successful local e-government implementation in a developing country. The model is derived and outlined as described in the following section.

## Deriving a Model for Local E-Government Implementation

This subsection outlines the steps taken to develop the local e-government implementation model for the Ugandan context as based on the perceptions of managers and administrators. Theoretically, the new model adopts and builds an existing e-government implementation model. The requirements elicited from the field study are used to extend a selected e-government implementation model. The new model of Local e-government implementation for Uganda extends the synthesized e-government stage model as proposed by Siau and Long [2005]. Requirements for the model are here revisited and used to extend the adopted model. A summary of the meta synthesis phases for e-government implementation according to Siau and Long [2005] is also presented as used in deriving the model.

### Determining Requirements for the Model

A descriptive survey used to determine requirements for local e-government implementation in Uganda was used. The requirements for the design of Local e-government implementation model were derived from the challenges and requirements obtained from the field study. The requirements for implementing local e-government in Uganda are summarized and categorized as technical or non technical in the following Table 2. The implications of these findings and requirements for local e-government implementation are then mentioned.

**Table 2: Summary of the Requirements**

Technical Requirements	Non Technical Requirements
IT skills to use the website.	Low illiteracy rates among citizens.
Reliable power supply.	Funds to sustain the website.
ICT Infrastructure	Low costs of internet
Website connectivity	Staff Training
Putting in place IT standards	Building trust in citizens
	Adequate financial resources
	Sensitizing citizens on the relevancy of the website

According to the results presented in Table 2 above, in order for local e-government to be successfully implemented, the technical and non technical requirements need to be put in place. These requirements are; i) adequate financial resource mobilization, ii) Build ICT infrastructure, iii) user training, iv) sensitization of users to benefits & relevancy of e-government and v) favorable Social political factors.

### Theoretical Contribution from Siau and Long's [2005] Meta Synthesis

The growing interest in e-government development has led to a number of models with varying or overlapping phases being proposed for its implementation. E-government

research has thus been based on different stage models [Baum, and Maio 2000; UN 2001; Deloitte 2001; Layne and Lee's 2001; Hiller and Be'langer's 2001] which presents a difficulty in comparing and understanding different research results. Siau and Long [2005] thus have synthesized these five current stage models into a single one that offers a common framework for researchers and practitioners in the area. The new e-government stage model has the following five stages: web presence, interaction, transaction, transformation, and e-democracy.

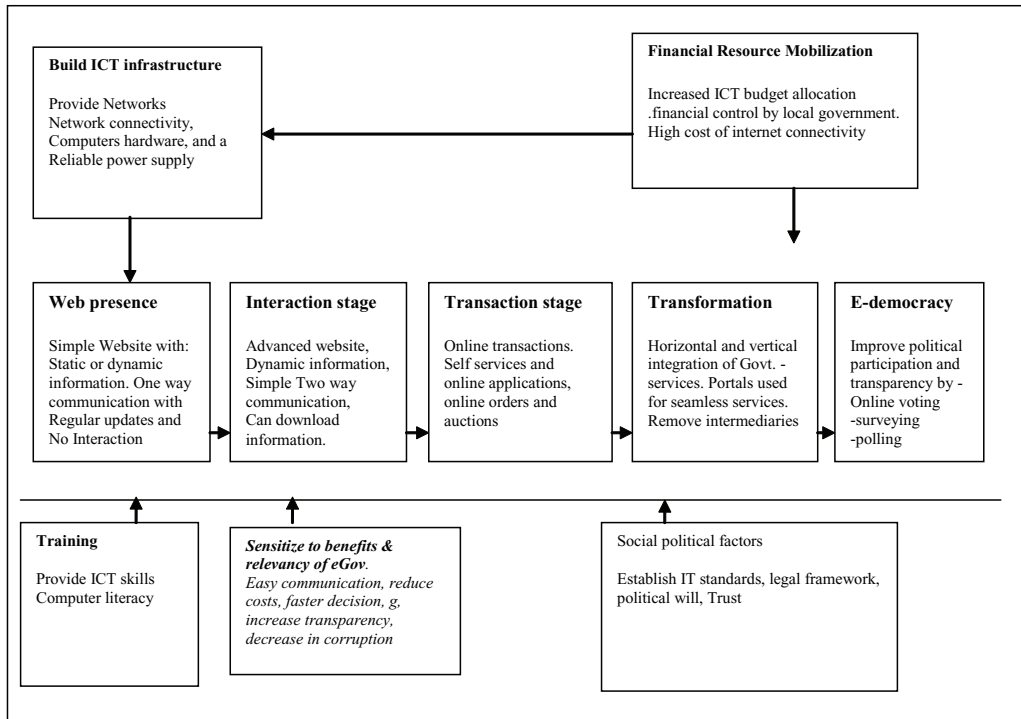
The Web presence stage has a website to post basic and static information for public viewing. Here interaction between government agencies and customers/citizens is not possible. The Interaction stage is where simple communication between government, government agencies and customers/citizens happens. The transaction stage allows customers/citizens to carry out complete online transactions using the designed government websites. At the transformation stage, governments transform the processes of offering services to customers through horizontal and vertical integrations. E-democracy stage allows citizens to carry out online voting, polling, and survey. This stage therefore promotes online political participation.

The synthesized e-government stage model presents a road map for practitioners to follow in their e-government projects. Its strength is in unifying a number of existing e-government implementation models into one framework for researchers and practitioners to use. These steps though synthesized from existing models, do not suit all contexts as they unify models based on developed countries' requirements and not those of transitioning countries. The steps can best be used to implement e-government in developed countries where ICT infrastructure, power supply and IT skills are already in place but not in developing countries like Uganda. This is because, in Uganda, ICT infrastructure is not well developed, power supply according to results obtained from the field is not reliable and in some cases does not even exist. The ICT skills among employees are still missing; there is a lot of illiteracy among citizens who cannot use websites on their own. Therefore, the need remains to extend existing model by incorporating requirements generated from the field in order to build one for the Ugandan context.

### **An Outline of the Model**

The model outlined in Figure 1 below is an extension of that of Siau and Long's [2005] synthesized e-government stage model using requirements obtained from the field study. Besides the five established steps of web presence, interaction, transaction, transformation, and e-democracy used for existing e-government implementation, the new model therefore describes new dimensions of: i) financial resources mobilization; ii) Building an ICT infrastructure, iii) training, iv) sensitization and v) Social political factors.

**Figure 1: A model for Local e-government Implementation in Uganda**



***Contributions of the Model to Local e-government Implementation***

While the outlined model in Figure 1 extends an existing one as described by Siau & Long [2005] it also makes a contribution by presenting new features useful for implementing local e-government for a developing country environment like Uganda. The model provides for new dimensions required for the e-government implementation process mentioned and discussed here under the themes of financial resource mobilization, ICT infrastructure development, training, sensitization and Social political factors.

**Financial Resource Mobilization**

The primary challenge to e-government implementation in Uganda is limited financial resources to build sustainable ICT infrastructures. The need therefore remains to mobilize resources to acquire the necessary infrastructure and equipments to support implementation and sustenance of the local e-government projects. Funds are needed to expand capacity, support essential infrastructure and human resource training. Local governments need to lobby for funds from the national government to enable successful implementation of s e-government projects. Local governments also need support from development partners (donors) and other private companies and Non Government Organizations.



## **Build ICT Infrastructure**

An ICT infrastructure is recognized as one of the main challenges for e-government implementation in developing countries like Uganda. Following successful resource mobilization, local governments need to put in place an ICT infrastructure supported by reliable power supply and network connectivity. In Uganda, most of the available infrastructure dates back to the 1960s and is outdated. Most public offices in the ministry of local government have few computers that are largely outdated, yet this is a vital part of the ICT infrastructure if e-government is to be successfully implemented. Thus local governments need to put in place basic ICT infrastructure to enable the government capture the advantages of new technologies and communication tools which are very significant for undertaking an e-government initiatives.

Irregular and non-existent electricity supplies are also a barrier to implementation of e-government projects in the ministry of local government especially outside the major towns. This equally affects implementation and usage of e-government projects in Uganda.

## **Training**

Employee training should be done at all the five implementation stages, that's after putting up a web presence, at interaction stage, transaction stage, transformation and e-democracy stage. This is because different activities take place at different stages and also different services are offered at different stages therefore management need to equip staff members, citizens and well wishers with different skills at different stages. Following the web presence phase, management needs to train staff on how to use and post basic information on the website. At the interaction stage, they need to train staff on how to update information on the website, respond to clients' requests, complaints and comments. At the transaction stage, staff need to be trained on how to make and obtain orders online and how to offer services to clients. At the transformation stage, management needs to train staff on how to use the new processes. At the e-democracy stage, there is need to train them on how to prepare for online voting, polling and surveys.

## **Sensitization**

Sensitization is important for successful implementation of an e-government project in a developing country like Uganda where literacy is very low, people have negative attitude towards use of the website and are ignorant of the relevancy and benefits of using the website. It is therefore important for the government to ensure that citizens are sensitized at each and every stage of implementation to enable them easily adopt and enjoy services offered at each and every stage. Sensitization can be done through use of public places like libraries, schools, and any other points of computer contact by putting up instruction manuals in both English and local languages to enable them learn, develop interest and then use the system. Citizens should therefore be sensitized

at all the five stages that's to say at web presence, interaction stage, transaction stage, transformation stage and e-democracy stage.

### **Social political Factors**

Local government needs to put in place IT standards, legal framework, have political will and build trust in the use of ICTs. This can be achieved through putting in place clear policies and procedures, treating website users equally and lawfully at all stages, being transparent, giving accountability and holding those in charge responsible for their actions, establishing formal privacy policies and proactively monitoring actual practices to help avoid privacy breaches, setting the legal framework for electronic transactions and integrating IT Security in the system. For the e-democracy stage, the government needs to build trust by introducing use of e-signatures, data security, copyrights and many others.

### **Conclusion**

The existing E-government development models have been of little use in implementing local e-government in developing countries. This is largely because the models were developed based on requirements from developed country environments. Developing countries are still in transition and lack up-to-date technology, still face non-technical issues such as lack of public awareness about the benefits of e-government, coupled with a low e-readiness index. Therefore, the requirements and motivation toward e-government implementation is essentially different in developing countries due to these fundamental differences in technical, social and political factors. For a developing country like Uganda the need remains for customized local e-government models. This requires identifying the major activities required for development of local e-government, and incorporating them into the existing models that were designed based on the conditions in developed countries.

This study therefore identified requirements critical to successful implementation of local e-government projects in Uganda as a developing country. The model that was developed incorporates activities required for successful implementation of local e-government. These requirements include i) financial resources, ii) building ICT infrastructure, iii) training, iv) sensitization of relevancy and benefits of e-government and v) social political factors. This model outlined is therefore a step towards supporting local government agencies to successfully implement e-government projects in Uganda. The model generic and can be applied in other developing countries with similar contexts. Furthermore, the understanding of requirements and design of a model for local e-government project contributed to the extension of existing knowledge on e-government implementation models.

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