A Model of Success Factors for Implementing Local E-government in Uganda

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Abstract: Local e-government enables citizens at all levels to interact with government easily and access services through electronic means. It enables electronic transactions between government departments and the private sector to take place easily and cheaply. Despite these benefits, its implementation in economically and technologically transitioning countries remains problematic. This is largely due to the gap between the existing e-government implementation models and the local context for these countries. This study attempts to address this problem by describing a model for local e-government implementation in a transitioning country, Uganda. A field study was used to gather requirements for the model. The results are used to extend an existing model in order to describe a suitable one for Uganda. Basing on the results collected from the field, the research recommends that the extended model for local e-government implementation should address the dimensions of financial Resource mobilization, ICT infrastructure, training, sensitization, trust and social political factors. The model was validated in a questionnaire based field study

Keywords: Electronic government, Local government, success factors, Transitional country, developing country, Traditional local government, e-government implementation models.

1   Introduction

Local e-government extends services to local communities by providing online means for people to get together and communicate in a non-commercial environment in ways more relevant to the government. It 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). e-Government has the biggest impact at the local level where between 50% and 80% of the citizens' interactions with public bodies occur (Heeks, 2006). Thus it 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 (Tassabehji and Wilkinson, 2007). 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 remain 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 situation calls for research into investigating the different country specific drivers of e-government development using the following research questions:

i)   what are the requirements for local e-government implementation in Uganda?,
ii)   Which model supports local e-government implementation in Uganda?,
iii)   How can the designed local e-government implementation model be validated?

This study aimed to describe a model for local e-government implementation in Uganda, a developing country. Questionnaires in a descriptive field study were used to collect requirements for a local e-government implementation model. A model for e-government implementation in Uganda that defines dimensions financial constraints, ICT infrastructure, sensitizations, training and social political factors as pre-requisites for implementing local e-government in Uganda was developed. By identifying requirements critical to successful implementation of local e-government, the model acts as a guide

for successful local e-government project implementation in Uganda. The model is generic and can be applied to other developing countries. Furthermore, the understanding of requirements and design of a model for local e-government project contributes to the extension of existing e-government implementation models.

The rest of this paper is organized as follows. Section 2 presents one-government in sub-Saharan African countries. Section three discusses local e-government. Section 4 discusses models for e-government implementation Section 5 presents the research questions for this study. Section 6 explains field study for determining requirements and then presents the findings. Section 7 presents the Discussion and Conclusions.

2   e-Government in Sub Sahara African Countries

The state of e-government 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 an index of 0.76, below many other African countries such as Zimbabwe, Congo and South Africa. 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).

Botswana is currently considered one of the ICT usage power houses in the sub Saharan Africa (Bwalya, 2009). However, it still lags behind countries like Tanzania, South Africa and Lesotho, due to lack of both a formal e-government strategy and a problem 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 education making it hard for people to access e-government information and exchange views with government officials for decision making. There is also ignorance of the importance of e-government to citizens due to limited sensitization, promotions and awareness campaigns.

In Kenya the e-government development 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 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 ordinary citizens. 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 the country.

Implementing e-government in sub-Saharan African countries therefore faces problems of: 1) limited ICT infrastructure especially in the remote rural areas; 2) non-user friendly design of websites for e-government due to limited computer literacy levels; 3) low education levels which have also increased the rate of unwillingness to use e-government because the content is mainly presented in non local languages; 4) an inadequate human resource base trained to handle e-government projects; 5) donor funding dependency affecting the sustainability of the projects; 6) lack of a formal e-government strategy; 7) ignorance about the importance of e-government to citizens due to limited sensitization, promotions and awareness (Bwalya, 2009). On the other hand government agencies have the political will and intentions to implement e-government as they understand its benefits to their country.

3   Local e-Government

Local government is a governing institution with authority over a sub national territorially defined area. 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 differ from those of other countries (Ntambirweki, 1998). Local e-government is an online presence to enhance the quality, speed of delivery and reliability of services to citizens and business by adopting ICTs to modernize and change the way their administrations work. Local e-government projects involve individuals from

different departments within the local authority, other local authorities, regional partnerships, national projects, other public organisations and the private sector (Cotterill and King, 2006).

Local e-government provides benefits to both government and citizens like electronic voting (WITSA, 2003). It makes councils more open, accountable, inclusive and better able to lead their communities. It also enables local government to exercise electronic documentation management, electronic applications and electronic procurement. 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.

The concept of e-government has generally been concentrated at the national level and not the local level. Most studies about e-government evolution have been tailored to the national level, with little information focused on local e-government (Capgemini, 2007). The reasons for this 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 as they compete for qualified IT professionals with the private sector; iv) resistance and fear of change by employees as they feel threatened by new technologies; v) lack of sufficient resources to invest in local e-government;
vi) Staff turn-over and restructuring that lead to loss of skilled and experienced staff in Local governments (Ndou, 2005);
vii) Limited ICT infrastructure, and Inadequate and erratic power supply in rural areas of most developing countries;
viii) The digital divide.

The indicators of e-government at country level are widely accepted and commonly used as opposed to the regional levels. Thus, while at the national level, there are many theories and models for e-government, for local e-government little research is reported (Norris, 2005). Local governments share some of their e-government requirements with those at the national level, like 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, necessitating theories and models to deal with these aspects (Lofstedt, 2005). According to Grabow *et al.* (2002), the factors for successful implementation of local e-government projects are: i) the need to adapt and fit the guiding principles and strategy for local e-government to those of the municipality and other central communities; ii) top leadership and political support; iii) the financial shortages of towns and cities requiring that priorities be set for normative, strategic and operational control; iv) seamless integration of administrative processes at the local, central or federal level; v) integrating competence and greater qualifications into the comprehensive strategy of local e-government; vii) staff motivation and training; vii) compliance with the legal provisions (Eifert et al., 2003)

3.1 Benefits of Local E-Government to Citizens in Developing Countries

Apart from the general benefits of e-government, local e-government delivers direct benefits to citizens including:
i) It enables local government services to be more accessible, more convenient, more responsive to people with disabilities and those without;
ii) It helps to make councils more open, more accountable, more inclusive and better able to lead their communities,

iii) It gives citizens opportunities to debate with each other, engage with their local services and councils, access their political representatives and hold them to account,

iv) Use of modern communications infrastructure enables citizens to get employment in their areas

(The National strategy for Local e-government, 2002)

3.2 Local e-Government in Uganda

Uganda's e-government strategy aims to deliver high-quality customer-centric and performance-driven services to its customers in order to contribute to Uganda's economic and social development, as well as transforming the country into a competitive, innovative knowledge society (Rwangoga and Baryayetunga, 2007). The strategy is, however, challenged by the lack of adequate resources for ICT programs, a lack of coordination and training across government, poor network connectivity and low appreciation of integrated information systems. Uganda's Ministry of Local Government (MoLG) is responsible for ensuring the efficient operations of Local governments through proper coordination of the decentralization process. To harness the benefits of e-government services, the MoLG embarked on the harmonization the Local Government Information Communication System (LOGICS) and Local Government Financial Information Analysis System (LGFIAS).

LOGICS is an e-government application for developing national outcome indicators along the domains of e-administration, e-services, e-citizen and e-society. LOGICS has not been successful due to weaknesses of inadequate ICT skills, limited ICT infrastructure, inadequate rollout and follow up by the parent Ministry, erratic power supply, staff turn-over and restructuring that led to loss of skilled staff, resistance and fear of change, inadequate funding in local governments and inadequate technical capacity at the MoLG (Rwangoga & Baryayetunga, 2007). LGFIAS, on the other hand, captures financial data on revenues and expenditures. It generates in-depth reports on revenue performance, expenditure, donor funds and central government transfers. 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.

The development and integration of ICT within Uganda's ministry of local government remains uneven, with the lack of resources to dedicate to programs (Rwangoga & Baryayetunga, 2007). There is a limited effort to promote efficient application of electronic government processes and applications. ICT investment still remains an "ad hoc" affair, with individual Ministries seeking ICT funding to offset the minimal funding available through the governmental budgetary channels. Reasons advanced for slow progress include lack of staff training, poor connectivity of networks and low appreciation of the importance of integrated information systems.

4 E-Government implementation models

Different models have been attempted in order to implement e-government as the most fundamental infrastructure for programs that leverage IT in facilitating organizational change (Zarei et al., 2008). Based on complexity and level of integration, Siau and Long (2004) provide a taxonomy of different stage models of e-government implementation. The taxonomy is based on the e-government implementation models of Hiller and Bélanger (2001), Layne and Lee (2001), Moon (2002), the United Nations (UN) Web Presence Measurement Model (2001), Gartner Group (2003) and Deloitte and Touché (2001). Some stages for these models are similar while others are different. These models have been developed and used largely in the developed countries. They are oversimplified and not easily applicable for e-government implementation in developing countries where technical and non-technical infrastructures (i.e. cultural, social, political and economic issues) are not as mature as those of developed countries. Thus Zarei *et al. (*2008) argue for customization of these international models to suit the different contexts of individual 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).

The existing models have also 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 local governments (Lofstedt, 2005). They are little used in projects of e-government services at the local government level, the

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 that have more upto date technology than developing countries. There therefore remains a need for different countries to consider requirements for e-government implementation and incorporate them in these model (Zarei *et al.,* 2008). In response to these shortcomings of the existing models, Zarei *et al.* (2008) proposed a nine stage model of e-government development in respect to the Iranian context, as an example of a model that may be applicable for the developing countries with some customization (ibid).

Siau and Long (2005) conducted an analysis of these models in order to find commonality for the various phases. From their meta synthesis, they identified five key stages that summarize e-government implementation into five phases of: Web presence, Interaction, Transaction, Transformation and E-democracy. Based on the Iranian experience, a nine stage model for e-government implementation in a developing country has been described by Zarei et al. (2008). The nine stages of the model are strategy development, building infrastructure, building trust, making physical and electronic portals, initial interactions and stimulation, prototyping, enrichment and multi-dimensional development, integration, and development of the ICT industry. The models as presented here are compared as shown in Table 1 on the basis of the synthesized e-government stage models by Siau and Long (2005) and Zarei et al. (2008).

Table 1: Comparison of the e-Government Implementation Models

Stages	UN (2001)	Gartner Group (2000)	Deloittes (2001)	Layne & Lee (2001)	Hiller & Bélanger (2001)	Zarei et al(2008)
Web presence or catalogue						
Enhanced Web presence		X				
Interaction				X		
Transaction			X			
Transformation						
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 1 above reveals that none of the models caters for implementation of e-government across national contexts and perspectives. It also reveals that based on the complexity and level of integration, the models of Hiller and Bélanger (2001), Layne and Lee (2001), the UN web Presence (2001), Gartner (2003), Deloitte and Touché (2001) are similar with few variations. This conforms to the taxonomy for e-government implementation as described by Siau and Long (2005). A major variation is provided by the nine stage model of Zarei *et al. (*2008) based on the Iranian experience as a developing country.

5   Research questions

The literature in sections 2, 3 and 4 points to a gap between the use of existing e-government implementation models and the real conditions on the ground in developing countries. Existing international e-government development models are seen to be best suited to conditions in developed countries that have up-to-date technology, have resolved the non-technical issues of public awareness and e-readiness. E-government experiences thus vary, 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 for e-government implementation (ibid). The need therefore remains for different countries to identify the major activities required for developing their local e-government, and then incorporate them into national e-government models.

There are also 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 issues of cost and resource considerations, enhanced accessibility and greater scalability due to the larger number of citizens and businesses served. This calls for research into investigating the different country specific drivers of e-government development. The need therefore remains to determine requirements for local e-government implementation models in developing countries and the literature points to some unresolved questions for successful local e-government implementation in developing countries i.e. what are the requirements for a successful local e-government implementation in a developing country? Which model best supports implementation of local e-government in a developing country like Uganda?

6   Deriving a model for local e-Government implementation

This section outlines the steps taken to develop the local e-government implementation model for the Ugandan context. Theoretically, the new model adopts and builds on existing e-government implementation models. Requirements elicited in a field study are used to extend the steps of existing e-government implementation models. The model of local e-government implementation for Uganda thus extends the synthesized e-government stage model as proposed by Siau and Long (2005). The requirements for the model as obtained from the field study are presented.

6.1   The Field Study

A descriptive survey with a questionnaire was used to determine requirements for local e-government implementation in Uganda. The study was based in six districts of Uganda. The target population included managers and administrators of units in the six districts of Uganda. A non probability sampling method was used. Non probability sampling is any sampling method where some elements of the population have no chance of selection (Saha, 2008). Purposive sampling was thus used. The reason as to why this method was used was to capture only respondents who are most knowledgeable in the area of study.

A sample of the population was selected from administrators and managers. Interviews were used to gain information on requirements that were then confirmed by data collected using questionnaires. Out of a total of 160 (one hundred sixty) employees that were given questionnaires, 128 (one hundred twenty eight) returned correctly filled questionnaires. Collected data was categorized, quantified, coded and arranged in themes according to the research objectives of the study. Analyzed data is presented on the themes of website presence, utilization, benefits, challenges and requirements for local e-government implementation. Data was tested for reliability and validity before presentation

Sample size influences both the representativeness of the population and the statistical analysis of the data (Saha, 2008). It was determined based on the total number of administrators and managers in the six districts. It addressed issues of precision and confidence and was also influenced by the time available, budget and necessary degree of precision. The sample size needed was a function of the confidence interval of (+/-) 5%, for a confidence level of 95%, and the population size. Sample size was determined using the following formula (Bartlet *et al.,* 2001; Cochran, 1977; Krejcie and Morgan, 1970).

$$SS = \frac{Z^2 * (X) * (1-X)}{C^2}$$

Where: SS = Required Sample Size; Z = Z Value (e.g. 1.96 for 95% confidence interval); X = Percentage picking a choice, expressed as decimal (0.5 used for sample size needed); C = Confidence interval, expressed as decimal (0.05 +/- 5 used for sample size needed). Therefore, for a population of 51 managers and 108 administrators, the required sample size was 129. This sample size exceeds 5% of the population (51*.05=20 for managers and 108*.05=2.5 for administrators). The survey therefore required a sample size of 45 Managers and 84 administrators as respondents.

Reliability of the Questionnaire: Reliability is the degree to which an instrument measures the same way each time it is used under the same condition with the same subjects (Saha, 2008). Cronbach's

Alpha was used to test for reliability of the questionnaire for measuring the constructs as summarized in Table 2 in the appendix.

Table 2: Summary of Measurement Scales

Constructs	Alpha (Reliability)
Existence of the website	0.703
Benefits of the website	0.756
Challenges of using the website	0.545
Requirements for website implementation	0.833

Table 2 shows that on three measures of existence, benefits and requirements for website implementation, the instrument met the required level of 0.70 for Cronbach's Alpha, representing a commonly acceptable level of reliability for research. On challenges of using the website, it was 0.545, slightly lower than the required level of 0.70 and above. The results of the questionnaire can thus be relied upon.

Validity of Research Constructs: Validity tests whether the instrument measures what it is intended to (Carcary, 2008). These include divergent validity, discrimant validity, content validity and face validity. Factor analysis was used to compute convergent and discriminant validity. Principal component analysis with Varimax Rotation was performed.

Validity on Existence of the Website: Convergent and discriminant validity of constructs was calculated using SPSS. *Convergent Validity* according to factor analysis is satisfactory when items load high on their respective factors, i.e. they have an eigenvalue above one (>1.0) and item loading > 0.50 on their particular factors. In table 3, results show that six factors were extracted with an elgenvalue above one (>1.0). Most items extracted had loading higher than 0.50 on their factors, implying that there was a desirable measurement on convergent validity**.** *Discriminant validity* was evaluated by examining whether each item loaded higher on the construct it measured than on any other construct. Results for convergent and discriminant validity are presented in table 3 in the appendices.

Table 3: Component Factor Loading on Existence of the website

	Rotated Component Matrix[a]						
	Constructs on existence of the website	Component					
		1	2	3	4	5	6
1	You have been trained to use the website.	.776					
2	You have ever used the local government website.	.674					
3	Your local government website is linked to other websites		.354			.396	.356
4	You use the website to communicate with other staff			.703			
5	Information on local government website is up to date.			.773			
6	Information in your local government area is often shared		.646				
7	The website allows you to purchase/get services online.			.339	.593		.397
8	You have ever purchased services online using the website.				.711		
9	There is a budget to manage your local government website.	.320					.808
10	The website allows you to vote for political leaders online.				.740		
11	You have voted for political leaders online					.726	
12	Using the website you can express your views	.477		.363		-.520	
13	You trust that information posted on the website is secure.	.652					
14	You have ever sought for people's views on the website.		.817				
15	You have received feedback using the website.		.594	.318			
16	You have completely migrated to using the website.		-.310	.388		.597	
	Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.						
	a. Rotation converged in 8 iterations.						

In table 3, most constructs had higher loadings on their own factors than on other factors except item three with a loading of 0.396. Those with cross loadings like item 3, 7, 9, 12 and 16 had their cross loadings differing by 0.2 and above as per the cross loading rule. Based on the results, divergent and discriminant validity were achieved.

Validity on Benefits of the Website*:* Convergent Validity on benefits of the website was achieved because most of the constructs had an eigenvalue above one (>1.0) and the loading higher than 0.50 on their particular factors.

Table 4 show that three factors were extracted with an eigenvalue above one (>1.0) and all of the items extracted had loading higher than 0.50 on their factors, implying that there was a desirable measurement on convergent validity. *Discriminant validity* was also attained because most of the items extracted loaded higher on the construct it measured than on any other construct. All constructs had higher loadings on their own factors than on other factors apart from item one which had a cross loading. However, this too differed by more than 0.2 as per the cross loading rule. Discriminant validity was thus achieved as seen in the appendix.

Table 4: Component Factor Loading on Benefits of the website

	Rotated Component Matrix[a]			
	Constructs for benefits of the website	Component		
		1	2	3
1	It has made communication between staff and citizens easy	.769	.366	
2	It has reduced on daily working costs	.830		
3	It has enabled faster decision making	.851		
4	It has increased transparency in government		.960	
5	It has reduced on the level of corruption			.986
	Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. a. Rotation converged in 4 iterations.			

Validity on Challenges of the Website*:* Convergent validity as presented in table 5, shows that four factors were extracted with an eigenvalue above one (>1.0). Most items extracted had loading higher than 0.50 on their factors, implying that there was a desirable measurement on convergent validity. Discriminant validity was evaluated by examining whether each item loaded higher on the construct it measured than on any other construct. The results are presented in table 5 in the appendices.

Table 5: Component Factor Loading on Challenges of Using the Website

	Rotated Component Matrix[a]				
	Constructs on challenges of the website	Component			
		1	2	3	4
1	Insufficient funds to sustain the website.		.770		
2	Lack of IT skills among staff members		.768		
3	Lack of political will by politicians.				.873
4	Lack of trust in the website due to past system failures.	.595	.423		
5	Low internet speed affects usage of the website.	.844			
6	Lack of enough computers.	.435			-.643
7	High costs of internet affect usage	.387		.654	
8	Unreliable power supply.	.486			
9	Negative attitude to use of the website			.806	
10	High illiteracy rate among citizens.	.342	-.524	.473	
	Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. . Rotation converged in 6 iterations.				

In table 5 most of the constructs had higher loadings on their own factors than on other factors except item ten. This had a lower positive loading (0.473) than the loading for the other factor which had a high negative loading of (-0.524). Apart from that, the constructs had cross loading differing by more than 0.2 as per the cross loading rule. Discriminant and divergent validity were thus achieved.

Validity on Requirements for Website Implementation*:* Convergent Validity on requirements for website implementation was also significant as all items had an eigenvalue above one (>1.0) and the loading higher than 0.50 on their particular factors.

As presented in table 6, results show that three factors were extracted with an eigenvalue above one (>1.0) and all items extracted had loading higher than 0.50 on their factors, implying that there was a

desirable measurement on convergent validity**.** Convergent validity was therefore achieved. Discriminant validity was evaluated by examining whether each item loaded higher on the construct it measured than on any other construct. Results for convergent and divergent validity as presented in table 6 show all constructs had higher loadings on their own factors, implying that discriminant and divergent validity was achieved.

Table 6: Component Factor Loading on Requirements for Website Implementation

	Rotated Component Matrix[a]			
	Constructs on requirements for local e-government implementation	Component		
		1	2	3
1	Availability of adequate financial resources.	.779		
2	Availability of computers and website connectivity devices like MODEMS.	.814		
3	Web presence where information can be posted.	.703		
4	Training staff members to enable them use the website.			.831
5	Linking the website to websites of other local governments.			.640
6	Sensitizing citizens on the relevancy of the website		.523	.578
7	Building trust in citizens by providing security to information.		.767	
8	Putting in place IT		.816	
	Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. a. Rotation converged in 5 iterations.			

Field Study Results: The results presented in this section are from the analysis of data collected through questionnaires returned by local government employees in the six Ugandan districts.

Existing Websites for local government in Uganda - Data was collected on the presence of a website for the various local government authorities. Having a website is a key indicator of the effort towards local e-government implementation. The results of the proportion of local government authorities with a web site are presented in Figure.1.

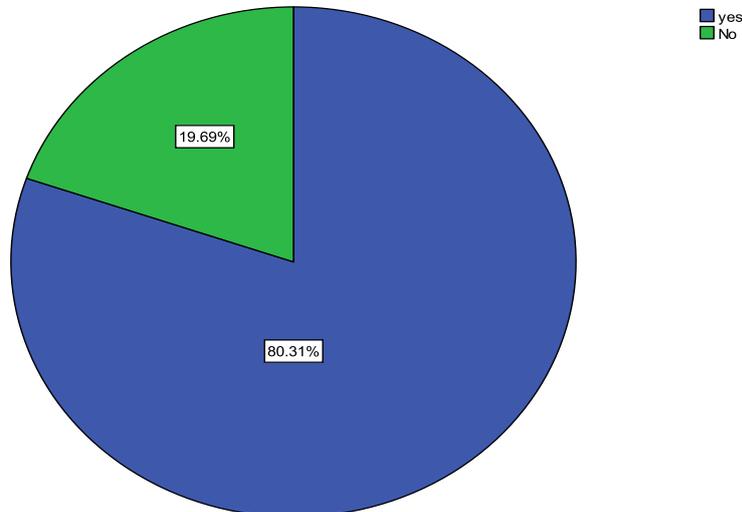Figure 1 reveals that a majority (80%) of local government considered already had a web presence.

Figure 1: The proportion of local authorities with a website

The Need for Local Government Website - Respondents whose districts had no websites were asked whether their districts needed it or not. Their responses are presented in Figure 2.
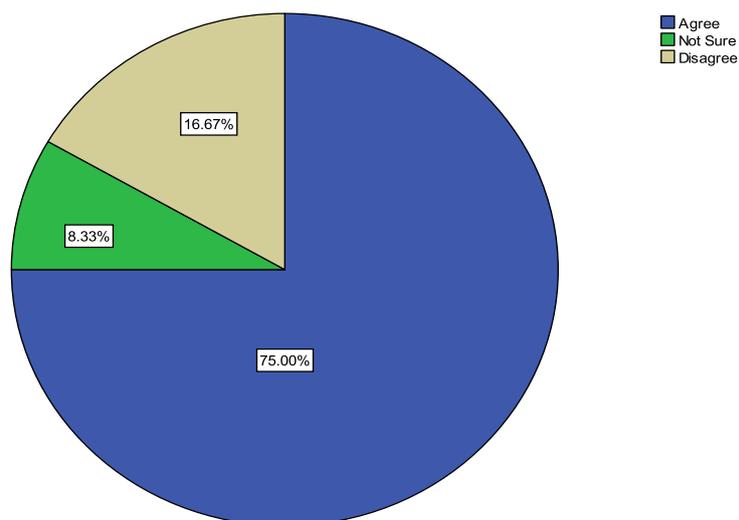
Figure 2: The proportion of respondents in need of a website

Figure 2 reveals a majority (75%) of respondents agreed that their districts needed a website.
Awareness on Benefits of Using Websites to Local Government -Views on the benefits of using the website for decision making, transparency, operational costs and level of corruption were analyzed and presented in Figure 3.
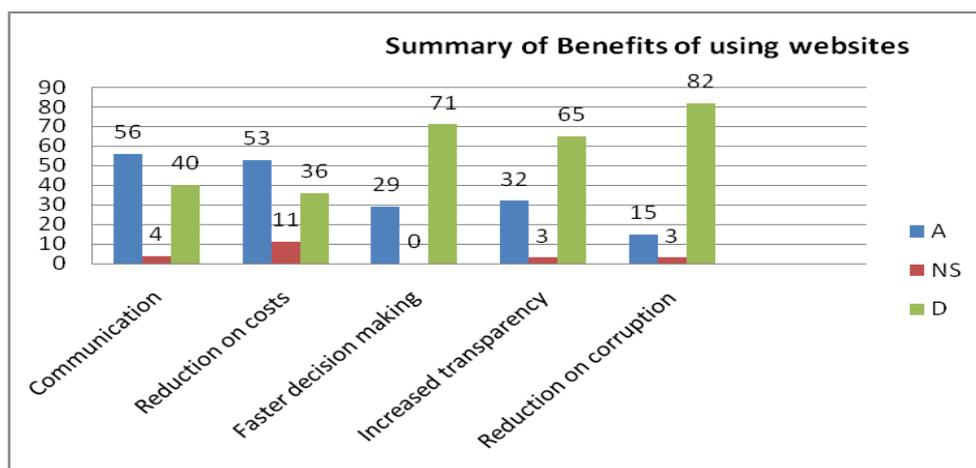

Figure 3: Benefits of using the website. (A = Agree, D = Disagree, NS = Not sure)

In Figure 3, a majority (56%) of respondents agreed that use of websites had made communication between staff members and districts easy and that use of the website has enabled them to reduce on operational costs (53%). For all other items, a majority did not see the benefit of using the website to reduce corruption, faster decision making and increase levels of administrative transparency. It also shows that a significant number of administrators were not aware of the benefits of using websites.

The Need for Local Government Websites Utilization - In those local authorities with a web presence, data was collected on user utilization for the websites. The website utilization levels tested for correspond to existing e-government implementation stages of web presence (WP), interaction (INT), transaction (TX), transformation (TN) and e-democracy (ED) as indicated in Figure 4. It shows the percentages of respondents who agreed to a particular mode of website utilization as having been attained. The corresponding e-government implementation stages are also indicated using WP, INT, TX, TN and ED as appropriate.

40

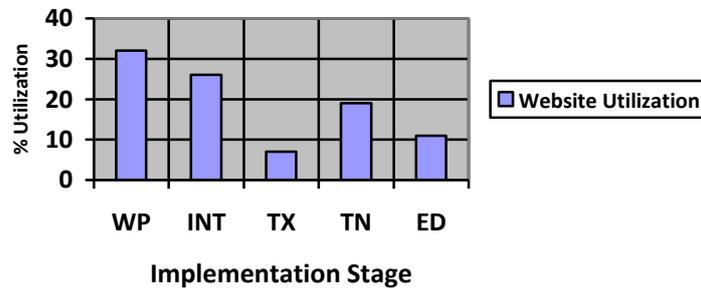**Website Utilization Vs Implementation Stage**

Figure 4: Website Utilization Vs Implementation Stage

The percent web utilization is used as a measure of e-government implementation. Figure 4 reveals very low levels of e-government implementation with a progressive decrease in web utilization from 32% at the web presence level to 11% for E-democracy. The transaction stage is the least utilized with only 7% of respondents agreeing to its need. In all the cases, the figures indicate that none of the existing stages of e-government implementation had been fully attained.

The Challenges of Using Websites to the Local Government - Figure 5 shows the percentages of respondents who agreed, disagreed or were not sure of the response to the suggested challenge for local e-government implementation in Uganda. The graph shows that implementation of e-government remains challenged by issues of high illiteracy rate among citizens, unreliable power supply, lack of trust, low internet speeds, lack of IT skills, high costs of internet, lack of ICT Infrastructure and insufficient funds to sustain the website.
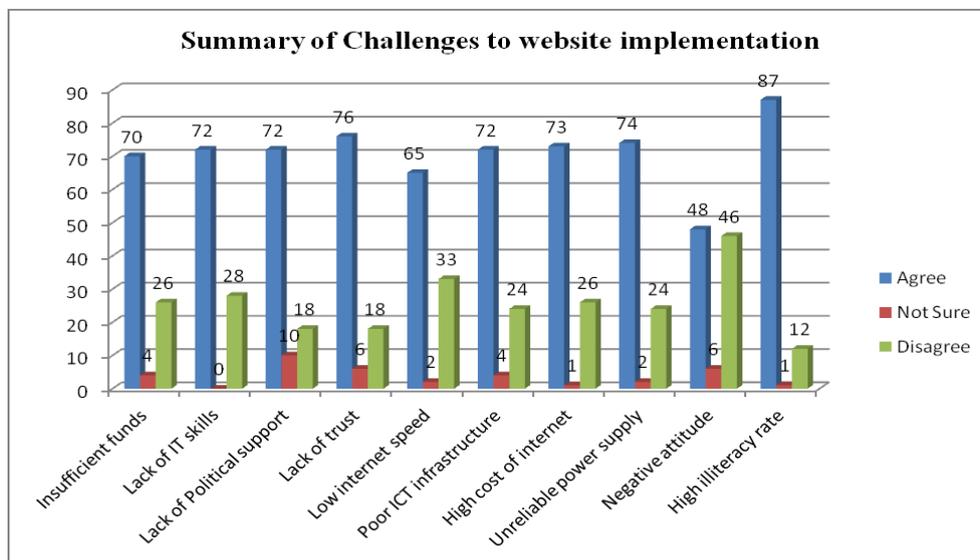

Figure 5 Summary of challenges to website implementation

Requirements for local e-government Implementation in Uganda The requirements for successful implementation of e-government were analyzed as presented in figure 6. It shows the percentages of respondents who agreed, disagreed or were not sure of the response to the suggested requirements for local e-government implementation in Uganda.
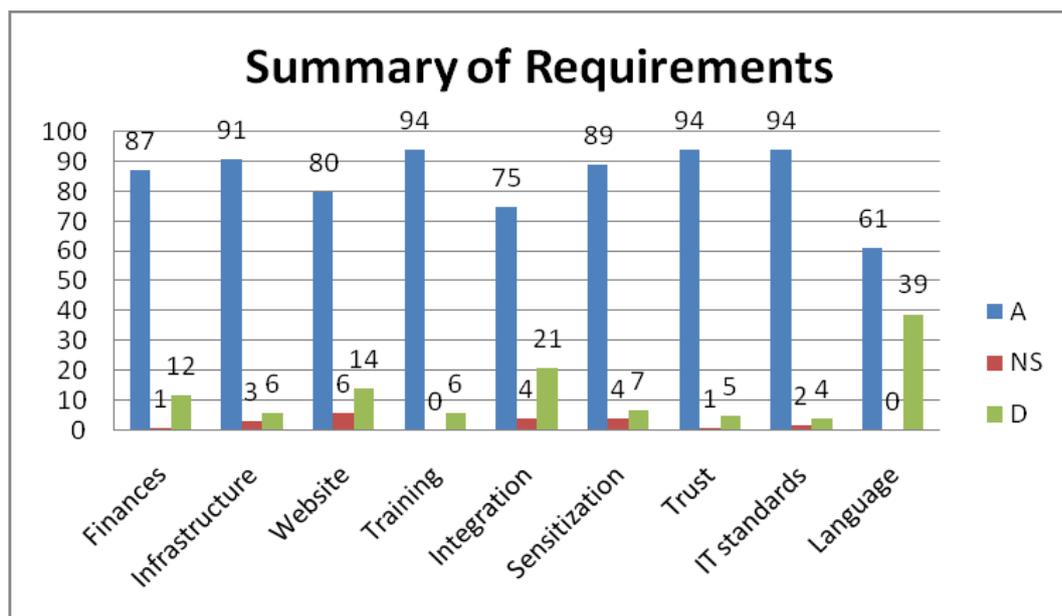
Figure 6 Summary of Requirements for Local e-government Implementation

In figure 6, requirements for local e-government implementation in Uganda require adequate financial resources (87%), ICT infrastructure (91%), staff training (94%), sensitization of citizens (89%), building trust (94%), web presence (80%), linking local government websites (75%), use of local language for content (61%) and it standards (94%).

6.2   Theoretical Contribution from the Meta-synthesis of Siau and Long (2005)

A number of stage models with overlapping phases have been proposed for implementing e-government (Gartner 2000; UN 2001; Deloitte 2001; Layne and Lee 2001; Hiller and Bélanger 2001). These present a difficulty in comparing and understanding different research results. Siao 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 meta synthesis phases by Siau and Long (2005) have five stages of web presence, interaction, transaction, transformation, and e-democracy. The *web presence* stage has a website to post static information for public viewing. The *interaction* stage is where simple communication between government, its agencies and citizens happens. The *transaction* stage allows citizens to make online transactions. The *transformation* stage offers services to citizens through horizontal and vertical integration. The *e-democracy* stage allows citizens to carry out online voting, polling, and surveys, thus promotes online political participation.

The synthesized stage model presents a road map for practitioners to follow in e-government projects. Its strength is in unifying existing e-government implementation models into one framework for researchers and practitioners to use. Though synthesized from existing models, it does not suit all contexts as it unifies models based on developed countries requirements. It can best be used to implement e-government in developed countries where ICT infrastructure, power supply, IT skills are already in place but not in a developing country, Uganda. This is because, in Uganda, ICT infrastructure is poorly developed, power supply is not reliable, ICT skills for employees are scarce, there is high illiteracy among citizens. Therefore, the need remains to extend Siau and Long's (2005) by incorporating requirements generated from the field, so as to create a suitable one to the Ugandan context. Requirements for successful implementation of local e-government implementation in Uganda as generated from the field based on the Ugandan experience are here used to extend it.

6.3   An Outline of the Model

The model as outlined in Figure 7 below extends Siau and Long's (2005) metasynthesis of e-government stages 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 now describes new dimensions of: i) financial resources mobilization; ii) Building an ICT infrastructure; iii) training; iv) sensitization; v) Social political factors.

The model in Figure 7 extends an existing model (Siau & Long 2005) with new features useful for implementing local e-government for Uganda.
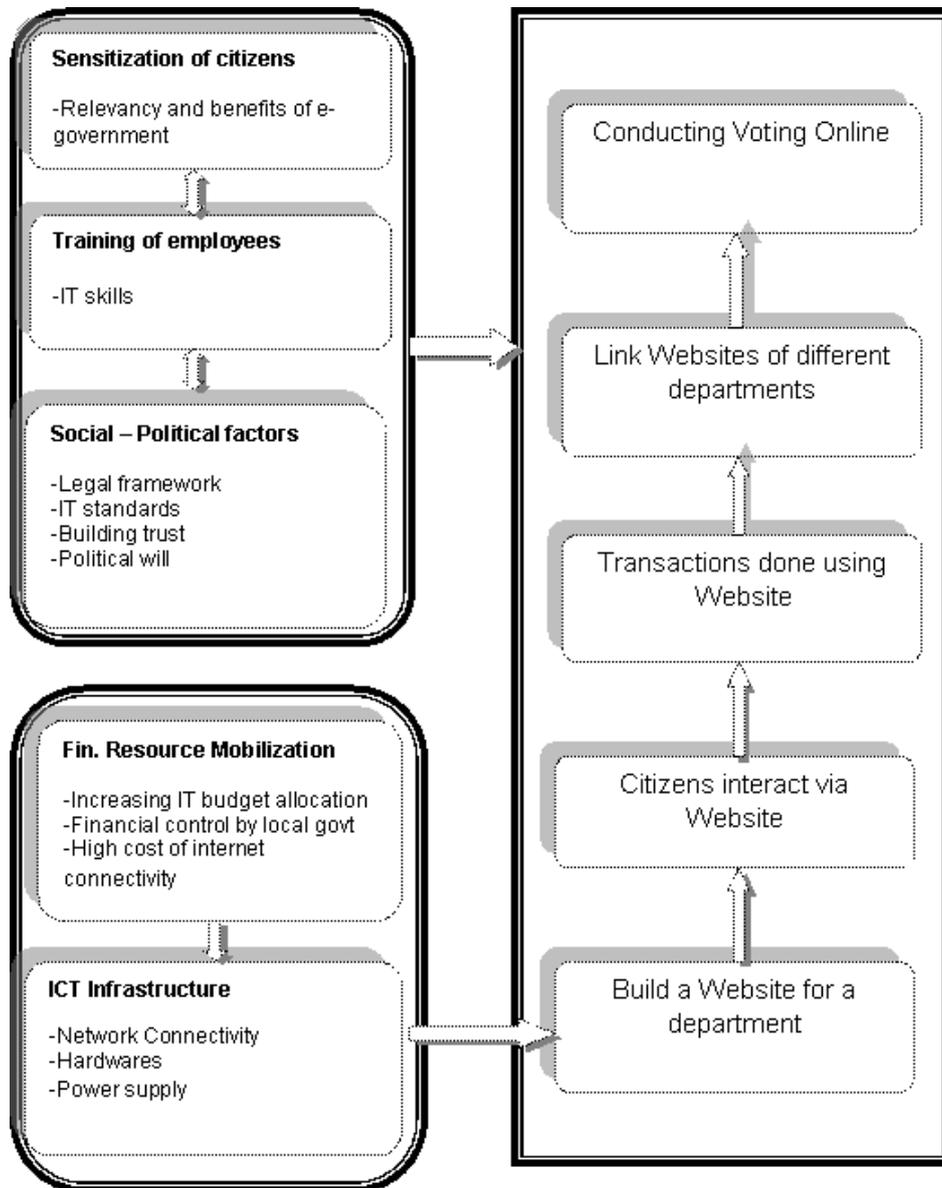

F**igure 7:** A model for Local e-government Implementation in Uganda

Financial Resource Mobilization: A challenge to e-government implementation in Uganda is limited financial resources to build sustainable ICT infrastructures. The need remains to mobilize resources to acquire the necessary infrastructure 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 government should be supported by national governments and, development partners, private companies and Non Government Organizations.

Build ICT Infrastructure: An ICT infrastructure is a key challenge for e-government implementation in Uganda. 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. Thus local government 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 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 and Sensitization: Employee training should be done throughout the implementation stages. Management needs to equip staff and citizens with different skills throughout the different stages of implementation. Sensitization is important for successful implementation of e-government project in 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. The model captures the important need that citizens are trained and sensitized at each and every stage of implementation to enable them easily adopt and enjoy services offered by e-government.

Social Political Factors: Local governments need to put in place political will.   According to (Eilu, 2008), developing countries like Uganda lack political will from government to implement the e-government systems as intended. This is because most governments do not consider ICT development a priority. This has been worsened by frequent transfer of government staff from district to district. This problem of lack of political will has partly contributed to the failure of e-government projects in developing countries.   In addition to political will, local government also needs to put in place IT standards, legal framework 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. This model therefore emphasizes putting in place an appropriate legal framework.

6.4   Validation of the Developed Model

Validation checks whether the developed model is in line with the collected requirements (Beecham *et al*., 2003).To validate this model, 74 IT managers and administrators were availed with the model and asked to rank it according to a basis on the validation questionnaire. The questions in those questionnaires concentrated most on the implementation requirements and the chronological flow of the proposed implementation stages. Validation helped to confirm that the model conformed to requirements and could lead to successful implementation of local e-government in Uganda. The model validation results revealed that respondents were in agreement that ICT infrastructure, financial resource mobilization and catering for social political factors plus training and sensitization are important requirements for successful implementation of local e-government in Uganda. Most agreed to recommend the model for implementation (85.14%). The model is thus considered as appropriate and applicable to Uganda and other developing countries with similar contexts.

7   Discussion and Conclusions

The model presented in this study outlined requirements for successful implementation of e-government as financial resources, building ICT infrastructure, citizen training and sensitization to relevancy and benefits of e-government, and social political factors. The study identified these requirements and steps for successful implementation of local e-government projects in Uganda to follow. Requirements are used to provide an extended model for local e-government implementation in Uganda. The model extends an existing one (Siau and Long, 2006). The model therefore has important theoretical and managerial implications for employees in local government and citizens. First and foremost, the results thus contribute to development of a customized model for successful local e-government implementation in Uganda. The model is generic and can be applied to other developing countries as with similar context as Uganda.

To Communities of users the model enables local e-government to be successfully implemented. Citizens can benefit by being able to access information at any time, any place, stay current with information and also participate in decision making by local government. Using this model Managers in local government are able to reduce operational and communication costs. The quality of service delivery will be improved, enabling local governments to build a good image and trust by citizens. Local government employees will be able to perform their tasks easily by accessing all the required information and disseminating it to those in need any time. The results are a source of literature for other researchers in the same area.

The results of this study point to the need to research in several directions. There is need to carry out further research on Citizen Awareness, literacy, implementation and adoption of local e-government in developing countries. The scope should be to establish the barriers, level of implementation and successful usage of local e-government projects in developing countries.

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