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Full Length Research Paper

Factors Affecting E-Government Service Utilization in Developing Countries

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Governments across the global are in the search for better ways of operating and providing improved services to the public through the use e-government technologies and services. Despite that many developing countries are crippling on utilization of e-government services, Uganda inclusive. This study was conducted in order to ascertain and examine the prevalent factors that affected the utilization of e-government services in developing countries with Uganda as a case study. Primary data were gathered from 5 Government of Uganda ministries and other organizations that supervised the implementation of e-government and utilization of e-government services in the country. Self administered questionnaires, coupled with interview guides were the main instruments used for data collection. Findings indicate that the most commonly used e-government services are; IFMS, Video Conferencing Services, VOIP, E-tax System, CCAS and LoGICs. However, IFMS is the most widely used service across government departments. The findings further indicate that the factors affecting e-government services utilization include; limited bandwidth, network failure, load shedding, lack of proper infrastructure, high internet charges, negative attitude of staff, resistance to change and systems breakdown. The findings suggest that for effective utilization of e-government services, there should be improved e-Government infrastructure, training of users, system scalability and reduced redundancy.

Keywords: E-Government, Services, Utilization, Developing Countries

INTRODUCTION

As Information Technology/Systems evolve, government agencies search for better ways to operate and provide improved services to the public through the use of e-government technologies (West, 2004). In the 1990s, the advent of network-based Information Systems represented a turning point in the strategic direction for government whereby opportunities for utilizing electronic technologies in achieving governance objectives surfaced through e-commerce (Kalakota and Whinston, 1997). E-Government is defined as "the delivery of Government information and services online through the Internet or other digital means" (West, 2004). According to Carter and Belanger (2004), e-Government can be viewed in two ways i.e. 1) transformation of the business of governance by improving services and renewing administrative processes and 2) transformation of governance itself by re-examining the functioning of democratic practices and processes. E-Government can be thought of as a conceptual lens through which the

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changing role and shape of the public sector in the 21st century can be examined. It is expected to be more digital, knowledge-intensive, driven by innovation, and interdependent than has ever been before (Joy, 2003).

The initiatives of Government Agencies and Departments to use ICT tools and applications, Internet and mobile devices to support good Governance, strengthen existing relationships and build new partnerships within civil society have taken a new trend. This trend represents a tremendous momentum to move forward in the 21st century with higher quality, cost effective government services and a better relationship between citizens and governments (Fang, 2002). This has led to the rapid growth and use of the Internet and its applications offering several opportunities and services for both public and private sectors to improve the delivery of services to their clients.

In the public sector, the Internet heavily impacts and shapes government activities in order to enable collaborations with society, citizens, businesses and other government agencies in a more efficient and effective way. This has increased the public sector's efforts in delivering electronic services to citizens through E-Government. Citizens expect efficient services delivered when and where they want them. MRG (2000) found that citizens perceived convenience, speed, and times saving as primary benefits of electronic service delivery. This interactive nature of ICTs, plus its ability to speed-up information, has overcome geographical distance, promoted ideological variety, and encouraged deliberation (Thompson, 1999). However, despite the benefits of using modern ICT tools, Governments still struggle with the problems of rigid, ineffective business processes due to insufficient use of E-Government. For example, users still believe that there is no alternative service delivery channel and are not aware of the availability of online government services. Having invested an enormous amount of resources in e-Government (Peters et al, 2004), governments in the developed world have strived understand the factors influence successful and effective utilization of e-government services. However, little has been done in the developing world. Moreover several scholars e.g. Carter and Belanger (2004); Fu et al (2006) argue that in order to achieve the success of e-Government service utilization, it is critical to understand the influencing factors. This study therefore sought to identify and examine the underlying factors that affected the utilization of e-government services in developing countries. This was achieved in three ways 2) by carrying out a critical examination of the extent to which the available e-Government services were being utilized and 2) by examining the challenges faced in utilizing e-Government Services and 3) by identifying the success factors for effective utilization of e-government services in developing countries.

Definition of key theoretical terms

A service is defined by Kotler and Armstrong (1991) an intangible activity or benefit that one party can offer to another and does not result in the ownership of anything. Services have characteristics that distinguish them from products including intangibility, inseparability, and variability, perish ability and inability to own a service. For the purpose of this study, an e-government service refers to an intangible activity/ benefit that governments provide to their citizens via electronic means (Wekpedia, 2008). There are various services that different governments are delivering to citizens electronically depending on the level or stage of e-Government development and the users' needs. However, the basic service is dissemination of information about structures and functions of particular government agencies. Mutula (2001) elaborates this to include local political information, unit lists, official reports and speeches, tenders and draft bills, while Silcock (2001) reports other services to include "National Health Service hospitals (non-emergencies), social services, doctor's surgeries, local councils and the Passport Agency public services". Silcock further notes that one of the major potential areas of e-Government services is that it can facilitate democratic activities ('e-democracy') such as online voting, campaigning and fund raising, voter registration, opinion polling, representative-voter communication and public feedback.

E-Government to different people attracts a variety of definitions to express its meaning. Some refer to it as digital governmental information or a way of engaging in digital transactions with citizens while others narrowly focus on using ICTs to deliver more efficient and effective government services (Grant and Chau, 2005). However, the World Bank defines e-Government as the use of IT to provide better services to both citizens and business and facilitate cooperation among government institutions. According to Fountain (2001) and Heeks (2003), e-Government utilization is expected to empower the community through public access to the information resources, increased efficiency, decentralization, citizen empowerment, increased transparency, and cost reduction.

In this study, e-Government is characterized as; 1) Electronic information-based services with reinforcement of participatory elements to achieve objectives of e-Government (Bertelsmann Foundation, 2001) and 2) The use of ICTs such as the Internet as a tool of service delivery (OECD, 2003).

Overview of E-Government Services in Uganda

Uganda has made gradual progress in the use of ICTs for government operation and provision of information and services to citizens. According to the 2008 and 2005 UN E-Government Readiness Report, Uganda ranks in the

135th and 125th place among the 179 UN member states respectively, while West (2008) ranks Uganda the 155Th out the 198 Countries. The e-Government readiness index assesses the technological sophistication and functionality of e-Government portals for the provision of information and services, the country's telecommunications infrastructure capacity, and the adult literacy rate. At the state level, the use of ICTs for e-Government provision is still in its early stages. The report also notes that Uganda is among the 15% countries whose head of state advocates for implementing E-Government Services.

In trying to understand Uganda's readiness for e-government, the survey included the web measurement assessment index that looked at how Governments are providing e-Government policies, applications and tools to meet the growing needs of their citizens for more e-information, e-services and e-tools. It measures the online presence of national websites, along with those of the ministries of health, education, welfare, labour and finance of each Member State. The study indicated that more countries are using information and communication technologies to provide information to their citizens, to provide the possibility of online financial transactions and to include citizens in e-consultation and e-decision-making. Notwithstanding these, a rrecent research in Uganda conducted by Microsoft found that only one in every 200 citizens is a regular user of e-mail (Borovits, 2007). Such conditions severely limit the extent to which countries can look to more ambitious e-Government efforts.

Challenges and Remedies for E-Government Utilization

ICTs in Government make it easier for business and individuals to deal with Government; enable Government to offer services and information through new media like the Internet; improve communication between different parts/levels of Government so that people do not have to be asked repeatedly for the same information by different service providers; give staff in offices better access to information so that they can deal with members of the public more efficiently and more helpfully; and make it easier for different parts of Government to work in partnership with the Central Government. However, a wide variety of challenges and barriers have affected the implementation and subsequent utilization of e-Government initiatives and services in developing countries. For example, Ndou (2004) identified the main challenges for e-Government development and implementation in developing countries such as ICT Infrastructure (e-readiness, computer literacy, telecommunication equipment), policy issues due to poor legislation, limited human capital development and lifelong learning (skills, capabilities, education, learning), change management (culture, resistance to change), partnership and collaboration (public/private partnership, community and network creation), strategy (vision, mission), and Leadership role of motivating, involving, influencing and providing support. In fact, over 60% of all E-Government projects are unsuccessful (Holmes, 2003). This is partially due to general resistance to change (Sandy, 2002), and also because of efforts to introduce change which are based on a 'theory of change that is fundamentally flawed' (Beer et al., 1990).

The Kitaw (2006) report on E-Government in Africa gives emphasis on three key challenges to e-Government applications such as improvement of overall literacy rate, development of telecommunication infrastructure, Governments' commitment. The other challenges in the study cited were the formulation of new regulations and policies and 'non connectivity" and "non political" barriers to accessibility of E-Government services, that require particular attention to the linguistic and cultural insight to bear on the conception, design and deployment of E-Government applications notably for rural, non-elite communities in Africa. In addition, Ndou (2004) identified important considerations for successful implementation and design of e-Government initiatives from successful e-Government projects studied. These considerations included e-readiness assessments, rising of awareness among private and public organizations, thinking small, being agile and fast, and investing in human development, adopting a holistic and comprehensive approach with clear vision and strategy, preparing to manage knowledge and change, showing sensitivity to local realities and stimulating collaboration and coordination among MDAs.

RESEARCH DESIGN

A survey was administered to a selected sample from a specific population identified by the researchers. The term survey is commonly applied to a research methodology designed to collect data from a specific population, or a sample from that population, and typically utilizes a questionnaire or an interview as the survey instrument Hopwood (2004). The research methods were both quantitative and qualitative. The study covered managers of e-Government systems in 5 ministries in Uganda and e-Government users.

To identify the study sample, Purposive Sampling Technique was used because the researchers were interested in respondents who had some experience in administering and/or using e-Government services. The respondents were both Technical Personnel (Senior IT Staff) and E-Government Service users in the selected government ministries, departments and agencies. The Ministries used in the study include the Ministry of ICT, Ministry of Local Government, Ministry of Public Service, Ministry of Finance, Planning and Economic Development, and the Judiciary. The ministries were

selected because of their areas of focus such as infrastructure development, promotion of science, technology and innovation, enhancement of agricultural production and productivity and improvement of public service delivery. In the 2010/2011 budget, these ministries were considered as strategic priorities to accelerate growth, employment and structural transformation for prosperity. The study targeted respondents in these ministries who were either involved in decision making, or technical issues or used e-Government Services.

Determining of sample size

Since the population of users of e-Government services could not be ascertained, because of poor record keeping, the researcher resorted to Roscoe's 1975 rule of thumb that states that a sample size of 30 to 500 is adequate to select a sample of 65 respondents for the survey, while 15 were purposively selected for interviews. Survey respondents included 13 from the Ministry of ICT and NITA-U (MoICT and NITA-U), 13 respondents from the Ministry of Local Government (MoLG), 13 respondents from the Ministry of Public Service (MoPS), 13 respondents from the Ministry of Finance Planning and Economic Development (MoFPED), and also 13 respondents from the Judiciary. 3 respondents were selected to participate in interviews from each of the five participating ministries/departments. The total sample of both the survey and the interview was 80 as seen in Table 1.

Of the above sample, 61 questionnaires were fully filled and returned while 9 interviews were conducted. This represented a 88% response rate, which is very good for this kind of research.

Data Collection Plan and Procedure

Before Data collection kicked off, a plan for the questionnaire deployment was developed and tested. This plan illustrated and guided the distribution of the study population and the expected respondents from each of the government ministry and/or department as indicated in table 1 in order to capture their views. The researchers pre-tested the instrument on 35 respondents to determine its reliability. For validity the researchers had people with diverse backgrounds and viewpoints review the survey questionnaire before it was administered, as advocated by Teijlingen (2001). This involved finding out if each item was clear and easily understood, finding out if respondents interpreted each item in the intended way, finding out whether items had an intuitive relationship to the study's topic and goals, and also finding out whether the researchers' intent behind each item was clear to colleagues knowledgeable about the subject. The pilot survey Questionnaire was distributed to experts. Results of the responses and questions were collected and analyzed validity. These procedures resulted in the questionnaire that was used in this study.

On the other hand, a reliability test was done to ensure the questionnaire was reliable according to Golafshani (2003), Suskie (1996) and also to ensure the questionnaire elicited consistent responses. To achieve this the researchers used Kirakowski (2000) prescriptions that involved the use of precise terminology in phrasing the questions, writing the questions as simple as possible, avoiding unwarranted assumptions about the respondents, avoiding double-barreled questions, choosing an appropriate response format, and pretesting of the questionnaire.

Data Analysis

The data analysis consisted of examining the SAQ and interview guide for correctness and completeness. Data were compiled, sorted, edited, classified, and coded into a coding sheet. Coding is a process of simultaneously reducing the data by dividing it into units of analysis and coding each unit. Coding was based on a qualitative evaluation of each sentence of each interview. In this case data was coded as belonging to one category only, since the interviews were one-on-one because there was no interleaving of comments. The categories were then integrated and synthesized into a core set of categories to develop a narrative in order to explain the properties and dimensions of the categories, and the circumstances under which they are connected. In this study, the researchers employed the grounded theory method to code and analyze the data. The theory was used because of its usefulness regardless of the granularity of analytical focus, the coding method, or the method of data generation (Glaser and Strauss, 1967). The grounded theory approach also allows the cultural dimension of the interaction of users and tools to emerge. This approach is rich and robust because differences in application can be accommodated. After this, descriptive statistics were applied to analyze and present data in tables and graphs.

On the other hand, the researcher transcribed the interviews and analyzed them using content analysis method which is the most suitable method for analyzing interviews and other qualitative forms of data as had been used by several scholars including by Kituyi et al (2012)

Table 1. Sample Breakdown

Survey sample			
MDA	**Category**	**Job ttile**	**Number**
MoICT and NITA-U		IT and Project Managers	13
MoLG		Officers	13
MoPS	Users	Personnel and Project Managers	13
MoFPED		IFMS Staff, Personnel	13
Judiciary		Officers	13
Total (Survey)			**65**
Interview sample			
MoICT and NITA-U			3
MoLG			3
MoPS	Service Providers	Policy Makers/Senior officers	3
MoFPED			3
Judiciary			3
Total (Interviews)			**15**
Total sample (Survey and Interviews)			**80**

Table 2. Gender of respondents

Gender	**Frequency**	**Percentage**
Female	34	55.7
Male	27	44.3
Total	**61**	**100**

Table 3. Age of respondents

Age bracket	**Frequency**	**Percentage**
18-25 years old	6	10
26-30 years old	13	21
31-40 years old	19	31
41-50 years old	18	30
>=51 years	5	8
Total	**61**	**100**

FINDINGS OF THE STUDY

Respondents' attributes

The people who participated in this study had the following personal attributes:

Respondents' gender

Descriptive statistics were used to determine the gender of respondents. Table 2 shows the respondents' gender:

Respondents' age

Descriptive statistics were also used to determine the age of respondents. Table 3 shows the respondents' age:

Results in table 3 show that 19 respondents were in age bracket 31-40 years old, 18 were in age bracket 41-50 years old, 13 were in age bracket 26-30 years old, and 6 respondents were in age bracket 18-25 years old. Only 5 respondents were aged 51 years and above.

Respondents' job title

Descriptive statistics were also used to determine the job title of respondents. Table 4 shows the respondents' job titles:

Results in table 4 indicate that majority respondents representing 26% were IT staff. This was followed by Officers who contributed 21%. Project Managers were 11; Senior Officers were 12, while others were 9.

The above results on respondents' attributes show that

Table 4. Job title of respondents

Age bracket	Frequency	Percentage
IT staff	16	26
Project Managers	11	18
Officer	13	21
Senior officer	12	20
Others	9	15
Total	**61**	**100**

Table 5. E-Government Services Usage

Service	Frequency	Percentage
IFMS	31	50
Video Conferencing Services	12	19
VOIP	8	13
E-tax System	6	10
CCAS	4	6
LoGICs	1	2
Total	**61**	**100**

Table 6. Reasons for using E-Government Services

Purpose	Percentage
Budgeting	7.0
Information dissemination	13.4
Monitoring and evaluation	24.2
Financial reporting	14.1
Inter-office information exchange	28.1
Effecting payments	8.2
Others	5.0
Total	**100**

most the respondents were appropriate for the study since most of them were IT staff and others were equally in good positions to comprehend, understand and fill-in the questionnaires.

The E-Government Services Used and for What Purpose

The respondents were asked whether they have used any of the E-Government Services and for what purpose. Such services included IFMS, VOIP, Video Conferencing Services, CCAS, E-Tax system and LoGICs. From the responses obtained, the services used include; IFMS, Video Conferencing Services, VOIP, E-tax System, CCAS and LoGICs. IFMS is the most widely used service across government departments. 50% of the respondents indicated that they had used the IFMS system for various aspects such as quick payments, budgeting, monitoring and reporting and financial accounting. However, other e-Government service systems scored less. The video conferencing services had been used by only 19% of the respondents, while 13% had ever used VOIP. 10% had used e-tax System while only 6% and 2% of the respondents had ever used CCAS and LoGICs respectively as shown in table 5.

Purpose of E-Government Services Usage

Qualitative data were solicited from respondents to determine the reasons for using e-Government services by respondents. The responses obtained are given in table 6.

Rate and Frequency of E-Government Services Utilization

The Highest percentage of the respondents interviewed i.e. 62% were found to have used at least an e-Government Service on a daily basis, 24% had used the services on a monthly basis and 14% rarely used. The survey also found that no one uses the services on a weekly basis. Table 7 shows how often e-Government

Table 7. E-Government Services Utilization

Period	Freq	Percentage
Daily	38	62
Weekly	0	0
Monthly	15	24
Rarely	8	14
Total	61	100

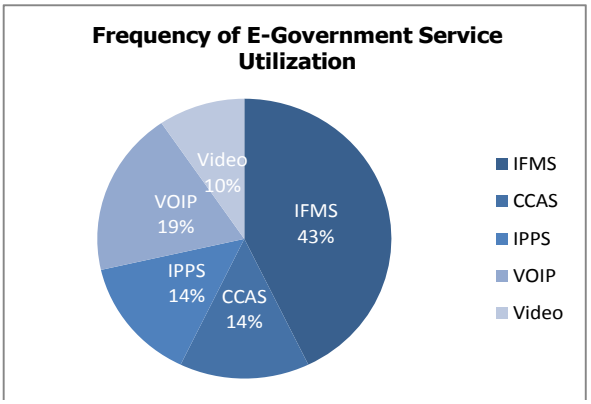

Figure 1. e-Government service utilization rate

Table 8. Benefits of E-Government Services

Grade	Frequency	Percentage
1-Very Useful	46	76
2- Useful	9	15
3-Fair	5	7
4-Not Useful	1	2
Total	**61**	**100**

services are used over time.

The IFMS was identified as the most frequently used system with 43% as the most used and with a high rate of daily usage of 62% of the respondents. This is because the users find it directly related to their work and that the IFMS service exists/has been implemented in all the ministries where the interview was carried out. The rest of the services had a response of 24% and below. This is largely attributed to the fact that these services are still mainly used within their ministries or the services are still in their infancy/pilot stage for example the CCASS, IPPS, VOIP, and video conferencing services. These services were rolled out in 2010, 2011, 2011 and 2009 respectively. Figure 1 shows the rate at which each e-Government service was being used:

Benefits of e-Government

Data were generated to examine the benefits of e-government as seen in table 8.

Results in table 8 show that majority of the respondents (76%) suggested that e-government systems were very useful in their work in terms of quick service provision and proper data management. The IFMS, which was ranked as the most useful had been implemented in over 60 centers compared to other services that were still under piloting and full potential was yet to be exploited. Among these were Video Conferencing services, VOIP, CCAS and IPPS. 2% of the respondents believed the systems were not useful because they were limited in scope i.e. they could not perform some tasks. For example one respondent said as follows:

> *"The video conferencing service is not useful to me because I can only communicate with a few people who are connected".*

Factors affecting e-Government service Utilization

The respondents highlighted many challenges they faced

Table 9. E-Government Utilization Challenges

Challenge	Frequency	Percentage
Cost of infrastructure	6	10
User perception	14	23
Systems failure	9	15
Connectivity and power	32	52
Total	**61**	**100**

Table 10. Strategies for improving E-Government service utilization

Strategy	Description	Frequency	Percentage
ICT Infrastructure	• Improvements in managing and expanding ICT infrastructure • Operationalisation and commercialization of NBI • Bandwidth improvement • Network availability	31	51
Capacity Building	• End User Training • Build capacity through training	17	28
System Scalability	• The systems should be scalable	8	13
Counter-Redundancy strategies	• Alternative solutions to breakdown i.e. there should be duplicate systems for back-up.	5	8
Total		**61**	**100**

while utilizing e-Government services such as limited bandwidth thus low speeds of connectivity, network failure, disappointing network, load shedding, lack of proper infrastructure, high charges, negative attitude of staff, resistance to change, and systems breakdown. The responses were categorized into four main groups namely; ICT infrastructure, user perception, systems failure and power as seen in Table 9. 52% of the responds pointed out connectivity and power shortages (load shedding) as the major challenges they faced in utilizing e-Government services, while 23%, 15% and 10% said they were faced with user perception/attitude in terms of being resistant to change, system failure/break down and high charges and limited infrastructure respectively.

Strategies for Improving E-Government Service Utilization

The users suggested various ways on how e-Government services could be improved. These responses were coded, categorized and grouped into 4 major themes namely; e-Government infrastructure, training, system scalability and redundancy as shown in Table 10. 51% of the respondents called for improvements in managing and expanding e-Government infrastructure particularly to operationalization and commercialization of the national backbone infrastructure, bandwidth improvement and network availability. The following statement was given by one of respondents about infrastructure:

> *"The government should complete the internet link from Mombasa as one way of improving internet infrastructure and reducing costs"*

Further to this, 28% of the respondents pointed out the need for building capacity in terms of training on e-government services, while 13% suggested system scalability and 8% pointed out the need for counter-redundancy strategies for e-Government systems to cater for systems breakdowns. The following statement was extracted from interview responses on the need for training:

> *"…many of us in this organization have never been trained on ICTs. Therefore we need training for us to be able to use e-government services"*

DISCUSSION OF THE FINDINGS

Most of the e-Government services are used within the host ministry or government department apart from the

IFMS which is used across ministries and departments hence having the biggest implementation scope so far. The statistics from the MoFPED and IFMS archives show that IFMS services have been implemented in over 60 centers i.e. 22 Ministries, 24 Central Agencies/Authorities, 8 Local Governments, and 6 Projects, 2 each under the Ministry of Local Government, MoFPED, and Ministry of Education. The e-tax system is not very much used by public servants, given that they operate on budgeted funds allocated to them that are already exclusive of tax. The services are either specific to that government department or they are still at their infant/pilot stage.

The major factors affecting utilization of e-government service were found to be limited infrastructure, unstable power supply, slow and inaccessible internet, lack of knowledge and poor attitude towards change among others. These findings are in line literature e.g. Ndou (2004); Holmes (2003); Sandy (2002); Beer et al. (1990); Kitaw (2006).

While the strategies for effective utilization of e-government services were suggested as increased investment in ICT infrastructure by government, training, sensitization and establishment of e-government utilization policy. These strategies are also largely in-line with literature as seen in Ndou (2004) and Kitaw (2006).

CONCLUSION AND RECOMMENDATIONS

This study was vital in identifying the factors effecting utilization of e-Government services in most developing countries. In effect, the biggest hindrance to effective utilization e-Government utilisation lack of knowledge and limited e-government infrastructure. Based on the these challenges the and suggested strategies for improved e-government service utilization, this study proposes that governments of developing countries should invest in infrastructure and training to improve knowledge, create awareness and also improve user perception.

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