

**An exploration of challenges affecting the Adoption of Information and communication
Technologies (ICTs) by Government libraries in Kenya.**

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ABSTRACT

In Kenya, many libraries have embraced the use of ICTs to leverage their services. While the extent of the use of ICTs in these libraries vary vastly, it is reported in literature that the use of these technologies are also faced by different challenges. Accordingly, this study sought to the key challenges affecting the adoption of ICTs by government libraries in Kenya under two objectives: to describe the challenges affecting the adoption of ICTs by government libraries in Kenya and recommend measures that should be taken to arrest the challenges. The study was informed by e-readiness model and guided by qualitative research methods. Twelve (12) libraries were selected purposively. Data was collected from the heads of selected libraries using interview method. Website and documentary analysis was also used to enhance data quality. Data presentation and analysis was done qualitatively, however this was simplified using figures and tables based on excel software. According to the findings, the adoption of ICTs by government libraries is affected by different managerial, financial, technological and staff related challenges. Based on these findings, the study recommended the formation of ICT committee at the department of government Library Services (GLS), enhancing internet access in libraries, adapting a standard system for government libraries, development of ICT policy for libraries and exploring alternative sources of funding by libraries.

Key words: Libraries, government libraries, information, communication, technology

1.0 Background Information

Worldwide, institutions are embracing electronic government modes of operation as a way of addressing their service delivery challenges and improving the quality of their services. This involves adopting various Information and Communication Technologies (ICTs). According to the available literature ICTs are capable of facilitating the provision of quality services thus making such institutions competitive (Aligula and Etta, 2006). In the same regard, libraries are at the forefront in adopting various ICT technologies towards transforming their service delivery.

According to Amarabeh and Abuali (2010) ICTs have the ability to transform relations between government and its citizens, business and other agencies and can serve a variety of different needs, including better delivery of public service/s to citizens; improved interaction with users; citizen empowerment through access to information; efficient management; less corruption; increased transparency; greater convenience; revenues growth and/or cost reduction. The technologies include but not limited to websites, wide area networks, internet and mobile computing and telephony (World Bank, 2008).

West (2004) points out that the recent years have seen huge momentum to the adoption of ICTs in public institutions. This has come as a result of benefits that are promised by the ICTs in the effective delivery of services. The benefits have been mentioned variously in literature, include better policy outcomes, higher quality services and greater engagement with the citizens; providing increased access to information, human mobility, and significantly enhancing all elements of good governance including transparency, accountability, efficiency and effectiveness, responsiveness, forward vision and rule of law. Abhichandani and Horan (2006) predicts that from a global stand point, ICTs will constitute the dominant thought, culture and fashion in the society. True to the reality of the information society, e-government takes institution and citizens to the digital or virtual state when it comes to delivery of public services.

Asogwa (2011) argued that the use of ICTs and specifically computers in offices is traced to Britain where in 1957 the government sought the use of computers in its offices and this was followed by introducing the use of computers in public administration. The use of computers in offices went to a higher level when the World Wide Web (WWW) was discovered. At this point the United States

of America (USA) had enacted the Paper Reduction Act which required government agencies to transit from paperwork to electronic culture submitting, maintaining and disclosing information electronically (Al-adawi, Yousafzai, and Pallister, 2005).

In the global arena, United Nations has been at the forefront in promoting global ICT adoption. The United Nations General Assembly adopted the eight millennium development goals to be attained by 2015. Apart from the eight goal declaration, the member states added a provision that emphasized the importance of ICTs in supplementing the realization of the corresponding goals. Since 2001, the UN has been conducting global surveys aimed at supporting its member states in their efforts in adopting e-government and ICTs. These surveys highlight the strategies, tools and best practices on leveraging the use of ICTs to better serve the public. Apart from culminating in ranking of nations in terms of e-readiness, these surveys have all come up with invaluable reports based on different themes such as e-inclusion, connected governance, access to opportunities among others.

In Africa, the use of internet in government offices became effective in the 1990s. Since then, the adoption of ICTs in the continent has been anchored on different declarations and initiatives including the Pan African Development Systems (PADIS) which recognized the importance of access to government information as a way of solving Africa's development problems; the United Nations Economic Commission for Africa which continues to emphasize the need for African countries to adopt and adapt ICTs to the African environment and the Computers for Africa Project (CFA) which was started with the goal of sharing the wealth of the US technology with people in the least developed nations (Bwalya, 2009). At the same time, in Africa, concerns about the disparities in access to ICTs between the Western countries and the continent, triggered the birth of the African Information Society Initiative (AISI) in 1996. Operating under the African Union, AISI has since been spearheading initiatives for building a viable ICT industry in Africa. Through its support, a number of African countries have developed national ICT policies and recorded a growing number of e-government projects (Oyomno, 2006).

In Kenya the use of ICTs in offices and indeed in libraries can be explained within the background of different policy instruments but most importantly through ICT policy and strategy of 2006. In particular, under the Kenya vision 2030, ICT is identified as one of the key enablers of making

Kenya a '*globally competitive and prosperous nation with a high quality of life*'. Indeed the vision envisages to make Kenya an information and knowledge based society. According to Waema and Mitulla (2011), the national ICT policy focuses on making the government more result oriented, efficient and citizen centered within the broader framework of IT, Broadcasting, Telecommunication and Postal Services. The implementation of the ICT policy runs alongside the implementation of the e-government strategy aims to refine the relationship between the government and the citizens, with the objective of empowering them through increased and better access to public services.

Towards the implementation of the above mentioned policies, the government has moved to set up nationwide information infrastructure, implementation of web enabled databases and the operationalization of different information systems. Since this strategy was put in place, a number of achievements have been realized in terms of initiating ICT units in government ministries, deployment of ICT officers to take charge of technical services in the ministries, deployment of local area networks (LAN), provision of computers to government offices, installation of wide area networks to interlink ministries to the internet, development of various applications for ministries and development of websites for ministries.

Driven by these momentums, the service delivery environment is changing very rapidly for the library profession. In recent years, users can easily access information resources electronically while at the same time a lot of information is available digitally. In addition, the preferred way of access to information is through networks which have also engendered collaborative efforts among libraries in providing information services. To this extent, most physical libraries are integrated into virtual digital information systems. These trends present an opportunity for a revolutionary transformation in the way libraries define themselves and operate their services. Xiaolin (2005) put this transformation into perspective by arguing that as a component of this envisaged transformation, library services are switching from physical reading rooms to websites with mainstream services transfers from passive reading and circulation to active and interactive personalized services such as digital reference, selective dissemination of information, specialized portals, virtual information systems and information literacy. To meet these demands collection-

oriented workflows and library-centered and service structures have to transform into new user-centered and service-oriented approaches.

2.0 Statement of the Problem

Information and Communication Technologies (ICTs) are globally recognized as a vital catalyst in driving the reforms that are necessary for a more efficient and effective public service delivery at all levels. This has seen its principles being adopted by governments generally and institutions specifically to give citizens services that are prompt, convenient and responsive to their needs. Among the many achievements that have been made in the adoption of ICTs in government offices include LANs have been installed in different ministry headquarters in addition to acquisition of ICT hardware and software. Most importantly the government generally and institutions specifically have embraced different information systems. At the center of all these, institutions have established a web portal and advanced to mainstream the use of emails and other services.

The long list of achievements in the adoption of ICTs are generally skewed in disfavor of libraries particularly the government and public libraries especially when it comes to the adoption of specialized systems. The first ever comprehensive analysis of the state of government libraries in Kenya by the MSNHC (MSNHC, 2009) concluded that among other things, government libraries are immensely backward in the uptake of ICTs. This scenario scientifically called for an investigation into the challenges affecting the adoption of ICTs with a view of having them addressed.

3.0 Aim of the study

To evaluate the challenges affecting the adoption of ICTs by libraries in selected government ministries and propose a framework for addressing the challenges.

4.0 Objectives of the Study

- i) To explore challenges facing e-government adoption by government libraries.
- ii) To recommend ways of addressing the challenges affecting adoption the adoption of ICTs by government libraries.

5.0 Theoretical Framework

5.1 E-government Readiness (e-readiness) Model

E-government readiness (e-readiness) model was designed to assess the potential of countries to survive in a networked world and promote citizen oriented public services, while at the same time streamlining their operations to achieve greater efficiency and effectiveness (Zeied, Khairall and Al-Rashed, 2007). Generally, this model owes its prominence to the United Nations Public Administration Programme (UNPAP), which used it originally in the year 2003 and has continued to use it biannually to survey the e-readiness status of its member countries. The model generally defines e-readiness and identifies component indicators or measures, which are generally put into different categories. The variables are placed under four categories: technological infrastructure, human development, online presence and most recently e-participation.

Technology readiness: generally refers to the technical infrastructure that is needed to drive e-government. It covers the electronic components needed to carry information and services as distinguished from traditional forms of interaction among institutions. The indicators considered under this area comprise ICT equipment available in institutions such as personal computers, telephone lines, mobile phones and Broadband among other factors. To add on this list, Rahul (2002), argued that the technical infrastructure covers telecommunication networks, internal agency systems, cross-government systems, service delivery network access points (hardware) and internet access.

Policy readiness: Apart from the technical infrastructure, it has also been argued that a robust ICT deployment must be backed by strong supportive policies (West, 2004). To this end, institutions are expected to formulate comprehensive ICT strategies to accelerate implementation initiatives. A successful policy is one that is formulated, shared and owned collectively in the organization. Policy consideration, as reflected in rules, regulations and strategies and have a strong bearing on ICT components such as security, funding among other issues.

Human Resource Readiness: Human capital is a critical determinant in the maturity of an organization to make an effective use of ICT infrastructure (Ochara, 2005). The development of

ICT staff should therefore be treated as an institutional priority. At the foundation of human resource maturity is the need for institutions to employ staff with adequate technical, professional and managerial skills work with and spearhead ICT adoption. This has always been perceived in terms of relevant education. On the other hand, Moon (2002) argued that in addition to relevant education, organizations need to embrace capacity building initiatives so as to ensure that there is continuous and dynamic creation and acquisition of new competencies and capabilities. This can be attained through different capacity building arrangements including skills development programs, technical and professional development programs and research and development among many others.

E-government Online Readiness: According to Layne and Lee (2001), e-government is an evolutionary phenomenon, to be implemented as a continuing process and one whose development is to be conceptualized in steps. Across such steps, e-government increases in complexity and integration from the first to the last step. These steps are generally based on the complexity of the websites and include:

i) Emerging Presence

According to Fang (2002), this stage marks the beginning of online maturity in an organization. It is defined by having a basic website, portal or web link to an institution. It can also extend to some static, limited and basic information about the agency's mission, services, in addition to providing phone numbers and addresses for further information.

ii) Enhanced Presence:

At this stage, the website increases in quantity, quality and presentation, with more orientation to users' needs. It is distinguished by e-publishing initiatives accompanied by posting of information materials on the website (Visser and Twinomurizi, 2010).

iii) Interactive Presence:

According to Voslo and Belle (2007), at this stage, web presence expands dramatically creating platform for two way interaction to be possible. This provides for specialized database to be searched, forms and applications can be downloaded or submitted, email interactions with officers encouraged and there is a provision of full or partial intranets.

iv) Transactional Presence

At advanced levels, the institution graduates to full electronic handling of its transactions with fulltime intranets linked to websites as well as extranets (Cliff, 2002). This stage represents fully featured online services that allow users to conduct and complete entire tasks online.

v) Connected Presence:

The institution has transformed itself to a connected entity that responds to the needs of its citizens by developing an integrated back office infrastructure. At this stage all information systems are integrated and services can be found at one virtual centre. There is a gateway and links to all service units and associated service providers.

vi) E-participation variable:

The e-participation index assesses the quality and usefulness of information and services provided by an institution for the purpose of engaging its clients in public policy through information and communication technologies. It takes the form of E-information, E-consultation and E-decision making.

6.0 Methodology

This study was based on qualitative research approach and guided by descriptive research design, which allowed the researcher to describe different challenges that affect the adoption of ICTs in the selected libraries. The population of the study comprised of all the 42 government ministries which existed as at the time of the study. However out of this total population only 24 ministries had functional libraries qualifying them for the study. Using systematic random sampling techniques, 12 libraries were crystalized for the study. Structured interview method, based on interview schedule was used in data collection to collect data from all the librarians in charge of the libraries. Further, data was collected from all the websites of the sampled ministries through website content analysis techniques. The study employed qualitative data analysis techniques and made use of figures and graphs to improve on presentation.

7.0 Findings and Discussion

Given the design of this study, information about challenges was gathered from heads of ICT units and libraries and beefed up with data from web content analysis. The challenges identified by these respondents were analyzed under major themes as guided by the theoretical framework that is, management challenges, lack of initiatives and innovation, financial challenges, human resource factors and technological challenges. In an effort to determine the strength of these challenges, the study came up with the frequencies with which all the themes appeared in the responses. The summative analysis of the outcome was as follows:

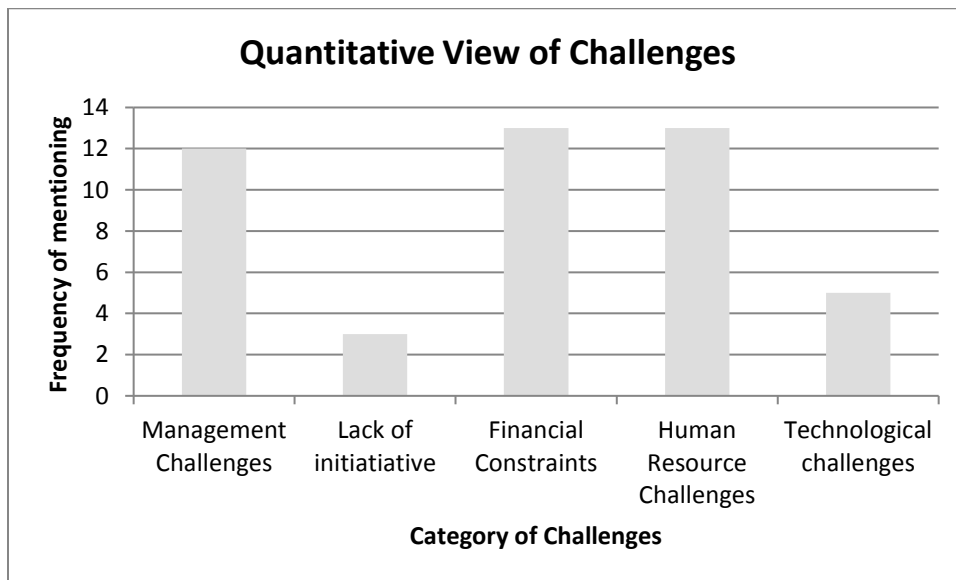


Figure 1: An Analysis of Challenges to E-government Adoption

7.1 Management Challenges

Management challenges took different dimensions from the responses gathered from the interviewees: lack of management support, low priority given to libraries, lack of coordination and lack of policy. From the 12 responses received in this regard, these four areas took different percentages as indicated in the figure below.

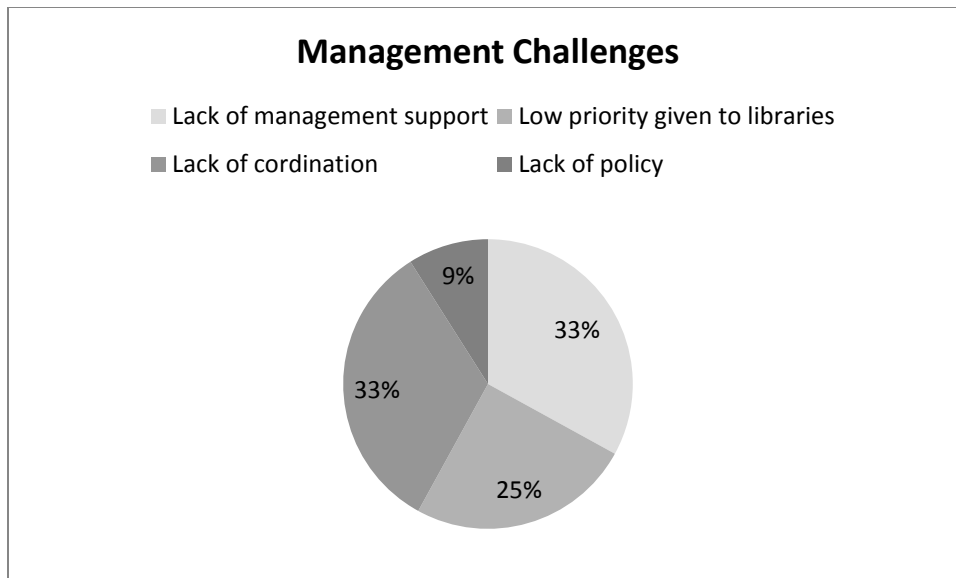


Figure 2: Analysis of Management Challenges to E-government Adoption.

The adoption of ICTs depends overwhelmingly on management support. This study discovered that in ministries where the Permanent Secretary (PS) had a personal concern and interest in ICT issues a lot was being achieved. In the Ministry of Transport, the PS circulated a memo demanding that officers communicate internally using e-mails and the system improved. Another case in point is in the Ministry of Gender where the PS sanctioned the librarian to look for and subscribe to online resources. In the contrary, where the administrative support was lacking, the ICT adoption rate would be affected.

According to Ndou (2004), librarians have generally felt that their occupation is not ranked high in the institutions. The situation is even made worse in current times when many people feel that the internet has all the answers to their information needs. In this regard, 25% of the responses in this category pointed to the fact that the libraries are generally given low priority at decision making levels in the ministries. This problem could be having its genesis in poor reading culture in the society. The libraries are not actively used and are therefore perceived not to be key to service delivery in these ministries. This is a challenge for librarians to explore other aspects of ICTs that promise value addition in their service delivery.

The problem of poor coordination was identified by 9% of the responses in this category. One of the most challenging realities around ICTs is to do with its crosscutting nature that is to mean that

its effects transcend all sectors of the society. At national levels, ICT policies have to contend with needs of all ministries, their departments and agencies. This coverage extends to stakeholders in the private sector. It is upon this reality that coordination of different players is a major issue in ICT adoption.

Based on the national ICT policy, it is envisaged that each ministry should constitute ICT committee, with the PS as the chair and the head of ICT unit as the secretary. Membership to this committee should be drawn from all section heads. It is this committee that is supposed to provide a synergetic leadership to ICT issues in the ministry. To date, only three ministries have fully fledged ICT committees. In other cases, the responsibility intended for this committee has been taken over by senior management meetings while in other cases, the ICT issues are absolutely surrendered to the ICT units, which are stand-alone departments. When it comes to the involvement of librarians in both the ICT committees and the senior staff meeting, only three librarians attend such meetings. It means therefore that ICT interests of the library are not directly represented in these meetings. This scenario was captured by both librarians and ICT officers. Overall, the ICT officers complained of poor coordination with other units, while the librarians tended to mostly blame the ICT units for not involving them in implementation at the ministerial levels.

The respondents also identified the problem of policy as affecting implementation. This was consistent with policy lapses identified under the analysis of policy maturity component. Until 2004, many studies pointed out that ICT adoption in the country suffered many setbacks which were blamed on the lack of a policy framework. However after the ICT was put in place the focus shifted to its effectiveness and due implementation. The loopholes in the implementation of the policy are clearly evident from the extent to which the recommended institution infrastructure has been put in place. Out of the 12 ministries surveyed only three have established ministerial ICT committees. On the other side, it was the intention that the national ICT and e-government policy be cascaded to lower levels, but so far only 7 out of 12 ministries have ministerial policies. The situation on the side of the libraries is made worse because many of them do not have working policy documents. Seven libraries reported that they have ICT related plans but many of these

plans are pointing to nothing beyond library systems. This is a proof that the librarians are missing the wider e-government perspective.

7.2 Lack of Initiative and Innovation

In many ministries, decisions related to ICTs are devolved. This implies that each section is required to come up with priorities and innovative initiatives to be undertaken within their service delivery frameworks. In this case the librarians are expected to recommend what is to be done for their sections, starting with proposals for web presence and other e-readiness aspects. This requires that the librarians should be well versed with ICT adoption requirements. Unfortunately, ICT is not just a novel area of study, it is a foreign subject to many librarians who are not even aware of the existence of the ICT policy. To corroborate this, many ICT officers blamed the librarians for not coming up with innovative ideas of ICT adoption in their sections. As a direct clash of opinions, the librarians counter blamed the ICT officers of not adequately assisting their units in implementation. In particular, even the newly formed department of library felt that some drastic strategy needs to be pursued to ensure that libraries make full use of the ICT infrastructure that have been made available at their levels including the internet and the website.

7.3 Financial Constraints

Adoption of ICT is an expensive undertaking. It takes a lot of money to roll out the different initiatives. Globally, this has skewed adoption of ICTs in developing countries as compared to developed countries. Indeed most initiatives adopted by African countries are driven by donor support from the developed countries. It is expensive to put the requisite infrastructure in place, to attract and sustain the required manpower, not to forget the cost of ICT applications. A mere library operating system such as KOHA would cost over a million Kenyan shillings.

Across board, ICT units and libraries have complained of not being funded adequately to undertake their initiatives. As demonstrated in figure 11, a whopping 69% of the responses related to financial challenges identified the problem of limited funding.

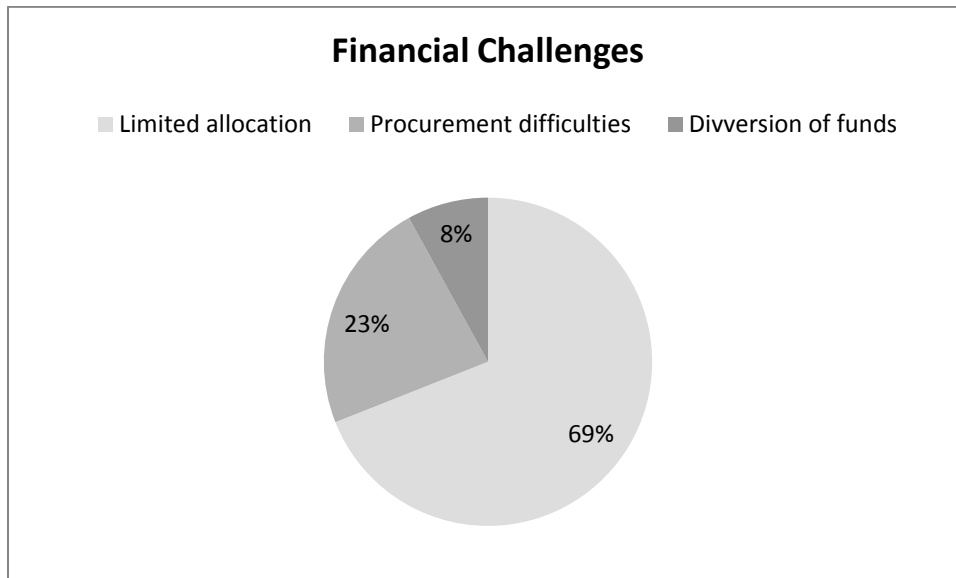


Figure 3: Financial Challenges in E-government Adoption

Further to inadequate funding, 23% of respondents raised issues with procurement rigidities which were making it difficult to access the money allocated to the library and ICT units to undertake different projects, some directly related to ICTs. This challenge is in part connected to outright corruption or put with a little touch ‘*diversion of funds*’. The point in these two cases was termed ‘*what is in it for me culture*’ by one respondent. All this refers to a situation whereby decision makers are only keen to subsume the budget plans and ensure that money is channeled to projects where they have special or personal interest. Put together, these financial challenges have slowed the rate of e-government adoption in ministries and in libraries. Intended initiatives have to be delayed for a number financial years before they take off. This was found to have affected many libraries which had plans of automating their systems. In some ministries, important initiatives end up being dropped when the required funds for implementation cannot be secured.

7.4 Human Resource Challenges

Human resource challenges cover skills, attitudes and adequacy of personnel. Taking all these dimensions into consideration, human resource challenges identified in the responses were put into four categories: lack of technical skills, inadequate staffing, staff turnovers and resistance to

change by staff. Weighted by percentages, figure below gives the quantitative dimensions of responses received in this regard.

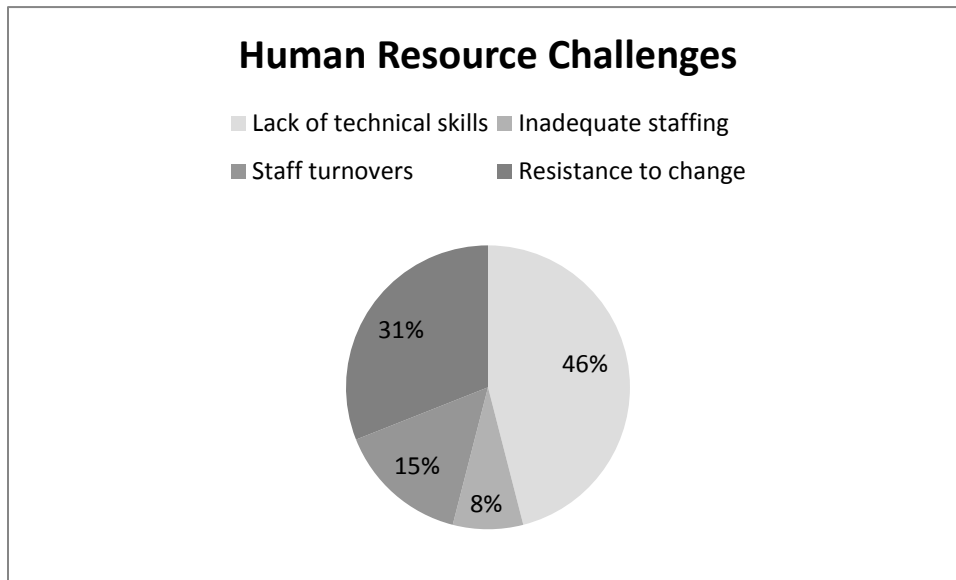


Figure 4: Analysis of Human Resource Challenges

In terms of skills, it is acknowledged that ICT issues are skills intensive. The ICT officers need top of the range skills to come up with innovative initiatives in their ministries, particularly where application systems are to be devised. In addition, non- ICT members of staff need to have the technical capacity to use ICT infrastructure and systems that have been put in place in the ministries. In this category, 46% of the responses were majorly from the ICT officers who felt that they are ill equipped to technically handle some assignments expected of them under the e-government strategy. This is probably the reason some ministries are lagging behind when it comes to generation of e-applications for their ministries. Users were also blamed for being technically challenged to generate systems at their levels. Indeed, notwithstanding their high levels of education, the head librarians are still not able to come up with even databases to manage their systems, so that they end up blaming the ICT units for weaknesses in this area.

On the other side, 8% of the responses were of the opinion that ICT units are understaffed to deal with the workload assigned them under the e-government strategy. The DEG has done a lot in staffing the ICT units. By all accounts, every ministry has at least an ICT officer in place. These officers are meant to steer initiatives in the ministries at large. However in most cases they are not

adequate for the task. In many instances, the ICT units have had to rely massively on interns and students on attachment to have their work going. This accounts much for their underperformance. Furthermore, there is 15% reported cases of staff turnovers which affect both librarians and ICT officers. Recent new posting of librarians in different ministries meant that they have to be given some time to elaborately address not just e-government issues but many other service delivery challenges. In the case of ICT officers, the study gathered that due to poor remuneration in the government sector, they had left in droves to join the private sector where they are better remunerated. This is a serious issue in situations where a lot of training resources have been spent on the officers. Unless the newly created National Salaries and Remunerations Commission deal with this issue adequately then service delivery by the ICT units will still be in jeopardy.

Adoption of ICTs bring a paradigm shift in the organization. The shift from organization to e-organization affects structure and management styles as it results into the redistribution of power and control. It also refocuses the organization to new values such as customer orientation, relationship management, streamlined processes, better communication and work flexibility. These changes have not gone down well with people who are stuck in the old order of things. Among the different perspectives of human resource challenges, 31% identified this as resistance to change while to some it is referred to as negative attitudes. This leads to two things: opposition to new initiatives, subversion of new initiative or just refusal to take up the new initiatives. In many cases this is not intentional, but rather due to lack of confidence and trust of technology. The procurement section was one of the units that were singled out from not being comfortable when it comes to domesticating e-procurement initiatives.

7.5 Technology Problems

Technological challenges that were pointed out during the interviews fell into three levels: changes in technology, digital divide and lack of standards. For purposes of analysis, the pie chart below gives the pictorial strength of all these dimensions from the responses.

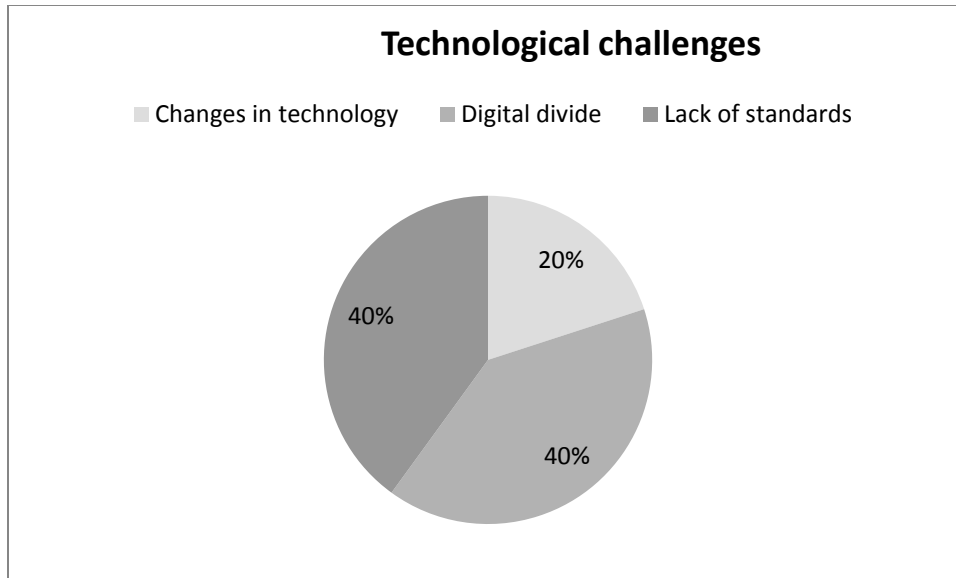


Figure 5: Analysis of Technology Challenges

Adoption of ICTs begins with putting in place the right infrastructure, followed by applications and then addressing the issue of the right service delivery frameworks. These areas were associated with different problems according to the findings under this study. In the first place, the internet is generally fortified as being the platform upon which its service delivery is based (Oyomno, 2006). This raises the question as to how many users of government services have access to the internet to date. The Communication Commission of Kenya (CCK) estimated that as at September, 2011 the number of internet users in the country stood at 10.2 million persons, against a population of 41 million people. Therefore, the reality is that the country has achieved so much in internet penetration but nevertheless, there are millions of Kenyans who live outside the reach of the national internet coverage. So the problem of digital divide is still real. It is within this perspective that some ICT officers felt that the overall goal of e-government is far from addressed until this digital divide is bridged.

Ministry libraries are generally focused in providing information to staff within their jurisdictions. In the digital or e-government era they should strive to lay out internet access points that balance with the number of their users. It is unfortunate that many libraries are not focused in this direction, even though some have made milestones by having cybercafés. In many libraries internet access is still seen to be the preserve of the staff. Such libraries do not provide for user access to the

internet within their holdings. It is also a bigger technological challenge that ministry libraries do not have internet access and adequate hardware provisions. Far and wide internet access has almost been fully realized, albeit with limited access points, however libraries still need an exponential increase in the number of their hardware provision to limit the gap between the number of users and the internet access points.

It also transpired that there are no standards in ICT adoption in ministries. Taking the case in libraries, there are three different databases, weblis and two koha applications. This means that the libraries do not have standard application systems. This scenario has some other related implications. Some ICT units complained of incompatibility between systems. This situation ends up hampering efforts of ensuring seamless interactions between public agencies. It is also noted that lack of standards leads to duplications as every agency tries to come up with its own solutions. This fact negates the pampered goal of ICT adoption in reducing duplication and making public sector service delivery cheaper.

Another challenge in ICT adoption, attracting 20% of the responses in this category, was to do with changes in technology. Most of modern systems being adopted in the ministries have a higher demand in terms of hardware capacities such as storage and speed. On the other side, the internet is now the standard platform on which systems are supposed to be run. This reality has meant that previously used systems that were not web based are destined to be phased out. It was beyond the scope of this research to go into the depths of these arguments, but concerns were raised that under these circumstances, ministries are forced to incur additional expenses to accommodate e-government.

8.0 Conclusion and Recommendation

8.1 Conclusion

The purpose of the study was to investigate challenges affecting the adoption of ICTs by government libraries in Kenya and to recommend ways of addressing the challenges. Based on the data gathered under the study, a number of challenges were uncovered. These challenges fell into five broad categories: management challenges, human resource challenges, lack of initiative and innovation from concerned implementers and technology challenges. Efforts in adoption of ICTs

are not backed by the requisite management support in most cases. This situation gets complicated because of the existing weakness and policies in implementation, particularly at the library levels. Weaknesses in policies, further undermines the necessary coordination among all players. Successful ICT adoption also calls for innovation and creativity of the players in the use of ICTs but this was found lacking particularly among the librarians. Shortages in funding, procurement bureaucracies and outright diversion of funds meant for ICT projects were also ranked highly among the specific challenges. Whereas the librarians are highly educated, further training for up-to-date skills (capacity building) in ICTs was found lacking in many cases. This situation is made worse by persistent transfers of capable manpower to other stations. On the side of technology, it was noted that ICT implementation frameworks in the ministries are run on dissimilar standards of hardware and software. This creates technical ‘communication’ problem which should be addressed as the country moves towards seamless public service delivery. The problem of digital divide was also invoked as a demotivator in ICT adoption. This concern arose from the fact that many people in the country do not have access to the internet and are consequently marginalized from the services offered online.

8.2 Recommendations

To ameliorate the identified challenges the study came up with the following recommendations.

- i)** An ICT committee should be constituted under the department of Government Library Services (GLS). The committee will be charged with the task of developing and monitoring ICT initiatives in ministries.
- ii)** Since internet connectivity is the foundation infrastructure in the adoption of ICTs, the study recommend that government libraries should not just have internet access for all their staff and users, but also mainstream its tools in their day to day activities.
- iii)** To arrest the problem of disparate systems, the study recommends an immediate action by the department of GLS through the respective ministries in ensuring that all libraries acquire and adapt a standard system.
- iv)** The study noted that national ICT policy has nothing specific on libraries and according recommends that the department of library services should develop a policy to guide implementation by the libraries under its jurisdiction.

- v) To solve the human resource related challenges, this study recommends that libraries should be headed by people who have at least bachelors in Information Science degree and are able to apprehend ICT issues adequately and avoid problems of lack of initiatives and innovation.
- vi) To solve the problem of limited funding, this study recommends that libraries explore other funding opportunities beyond those provided by the ministries.

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APPENDICES

APPENDIX I: Letter of Introduction to the Respondents

Dear Respondent,

I am a student at Moi University, taking a course in Masters of Philosophy in Information Science. As part of my studies, I am conducting a research on *'The Status of E-government Adoption by Libraries in Selected Government Ministries in Kenya'*. The aim of this study is to improve the understanding of e-government interventions by government libraries towards building better initiatives for their service delivery needs.

For the success of the study/Pilot study, you have been identified as one of the respondents. I most kindly request for your cooperation! It is my assurance that the information you provide will be kept with strict confidentiality, to which end, it is absolutely optional for you to provide your personal information.

Thank you in advance for taking your time to assist me in this research.

CARY F. O. OUMA

TEL: 0726156664

APPENDIX II: Interview Schedule to Heads of Libraries

1.0 Section 1: Background Information

1.1 Name..... (Optional)

1.2 Title

1.3 Name of ministry

1.4 Specific activities performed by the library

.....
.....
.....
.....

1.5 What is the role of ICT in the delivery of these activities?

.....
.....
.....

2.0 Infrastructure maturity

2.1 Is the library connected to the internet? Yes () No ()

If yes,

i) How many points of access are available in the library?.....

ii) What is the library user capacity including staff?.....

2.2 Does your library use any automated system in services delivery? Yes () No ()

If yes,

i) Name and describe the system.....

2.3 Are you aware of any other automated system(s) used in the ministry? Yes () No ()

If yes, please identify and describe the system(s)

.....
.....
.....
.....
.....

3.0 Policy Maturity

3.1 Does the library have a workplan? Yes () No ()

If yes, what are ICT related targets in the workplan if any?.....

.....
.....
.....
.....

4.0 Institutional Maturity

4.1 Does your ministry have an ICT committee? Yes () No () Don't know ()

If yes, are you a member of the committee? Yes () No ()

5.0 Human Resource

5.1 Please indicate your level of library related qualifications in the following categories:

- i) Certificate ()
- ii) Diploma ()
- ii) Degree ()
- iii) Masters and above ()

5.2 Have you attended any ICT related capacity building training in the last two year?

Yes () No ()

If yes, indicate the nature of training

.....

6.0 Online Maturity

6.1 Does the library have a website or any other form of web presence? Yes () No ()

If yes in 6.1,

- i) Does the library post any information on the website/web page? Yes () No ()
If yes, state the kinds of information posted.....
- ii) Has the library created any links from its website/webpage? Yes () No ()
If yes, state the kinds of links.....
- iii) Does the website/webpage provide an e-mail contact for users? Yes () No ()
If yes, does the library use such an e-mail.....
- iv) Has the library put any downloadable materials for users on the website? Yes () No ()
If Yes, outline the types of materials.....
- v) Has the library enabled users to complete some transactions online through the website? Yes () No ()
If yes, outline the transactions.....
- vi) Does the library use any e-consultation tools provided by its website or the ministry website? Yes () No ()
If yes, explain in which ways.....

7.0 Challenges

7.1 Explain any challenges affecting e-government adoption by your library.

7.2 Recommend how the above challenges can be addressed.

Thanks for your participation!

Appendix iii: Interview Schedules to the Heads of ICT Units

1.0 Section 1: Background Information

1.1 Name..... (Optional)

1.2 Title

1.3 Name of ministry

1.4 Specific activities performed by the ministry

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.....
.....

1.6 What is the role of ICT in the performance of these activities?

.....
.....
.....

2.0 Infrastructure maturity

2.1 Is the ministry connected to the internet? Yes () No ()

If yes,

iii) How is the distribution of access points?.....

iv) Is the library reached by internet access points?

2.2 Does the ministry subscribe to any automated system in services delivery? Yes () No ()

If yes,

iv) Name and describe the system(s) and there originators.....

v) Explain the availability of the systems specifically in the library.....

3.0 Policy Maturity

3.1 Does the ministry have an ICT policy? Yes () No ()

If yes, what are the key issues addressed by the policy?.....

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.....
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.....

3.2 What, if anything, does the policy say about libraries?

.....

3.2 Name and outline any other policy instruments guiding e-government adoption in Kenya?

.....
.....
.....

4.0 Institutional Maturity

4.1 Does your ministry have a functional ICT committee? Yes () No ()

If yes, what is the role of the librarian in the committee, if any?

6.0 Online Maturity

6.1 Does the ministry have a website? Yes () No ()

If yes,

i) Does the ministry post any information on the website? Yes () No ()

If yes,

a) State the kinds of information posted.....

b) Is there any library component in the posted information?.....

ii) Has the ministry created any links from its website? Yes () No ()

If yes,

a) State the kind of links.....

b) Are there any library related links.....

iii) Does the website provide an e-mail contact for users? Yes () No ()

If yes,

a) Does the ministry actively use the e-mail?.....

b) Does the library use the e-mail?.....

iv) Has the ministry put any downloadable materials for users on the website? Yes () No ()

If Yes,

a) Outline the types of materials.....

b) Are there any library related materials.....

v) Has the ministry enabled users to complete some transactions online through the website? Yes () No ()

If yes,

a) Outline the transactions.....

b) Identify those that are related to library activities.....

vi) Does the ministry use any e-consultation through its website? Yes () No ()

If yes,

a) Identify the tools and explain how they are used.....

7.0 Challenges

7.1 Explain any challenges affecting e-government adoption by your ministry.

7.2 Recommend how the above challenges can be addressed.

Thanks for your participation!

Appendix iv: Website Analysis Checklist

1. What is the status of web presence for the ministry and its library?
2. Identify and describe the types of information posted on the websites, for the ministry and library.
3. Identify and describe the links created by websites.
4. Are there e-mail facilities and what is the evidence of their usage in the ministry and in the library?
5. Identify and describe the nature of downloadable materials (if any) provided by the ministry and the library.
6. Identify and describe any online transactions provided by the websites for the ministry and the library.
7. Identify e-consultation tools provided by the websites and investigate their usage by the ministry and the library.

APPENDIX V: Interview Schedule to the Secretary of the Directorate of E-government

1. Name..... (Optional)

2. Title

3. Specific activities performed by the Directorate

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4. What achievements has the directorate made in line with the above activities?

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5. What specific roles does the directorate have in e-government adoption at ministry levels?

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6. To what extent has the directorate excelled in the above roles?

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.....

7. What are the general challenges affecting e-government adoption at the ministerial levels?

.....
.....
.....

8. How should the above challenges be addressed?

.....
.....
.....

Appendix vi: Interview Schedule to the Director of Government Library Services

1. What is the mandate of your department?
2. What is the role of government libraries as public institutions?
3. What is the role of ICTs in service delivery by government libraries?
4. What is the status of e-government adoption by ministry libraries?

5. Are there strategies that your department has put in place to fast track e-government adoption by libraries in light of the national e-government strategy 2004? Explain the strategies.
6. What are the challenges affecting e-government adoption by ministry libraries?
7. How best can the challenges be addressed?

APPENDIX VII: Pretest Interview Schedule for Heads of Libraries and ICT Units

Section 1: Background Information

- 1.1 Name..... (Optional)
- 1.2 Title
- 1.3 Name of ministry

SECTION 2: SUITABILITY OF THE INSTRUMENT

Please study the attached schedule and give your honest opinion on the following issues in relation to its content:

- i) The suitability of the factors (variables) use in the study
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.....

.....
.....
ii) The suitability and clarity of language used in the instrument

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.....
iii) Invasiveness of the questions in relation issues of privacy and confidentiality

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.....
iv) The suitability in the order and layout of the questions

.....
.....
.....
.....
v) Adequacy of the amount of time needed to complete the questionnaire

SECTION 3: IMPROVEMENT ON THE INSTRUMENT

Based on your opinions in the above section, please recommend any major changes that should be done on the instrument

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.....

APPENDIX VII: List of Government Ministries and the Status of Their Libraries.

Name of Government Ministries in Kenya	Whether the ministry has a library at its headquarters	Whether the ministry was studied
1. Ministry of Agriculture	Yes	Yes
2. Ministry of Cooperative Development and Marketing	Yes	-

3.	Ministry of Defense	Yes	Yes
4.	Ministry of East African Cooperation	Yes	-
5.	Ministry of Education	Yes	Yes
6.	Ministry of Energy	Yes	-
7.	Ministry of Environment and Mineral Resources	-	-
8.	Ministry of Finance	Yes	Yes
9.	Ministry of Fisheries Development	-	-
10.	Ministry of Foreign Affairs	Yes	-
11.	Ministry of Forest and Wildlife	-	-
12.	Ministry of Gender, Children's Affairs and Social Development	Yes	Yes
13.	Ministry of Higher Education, Science and Technology	-	-
14.	Ministry of Housing	-	-
15.	Ministry of Immigration and Registration of Persons	Yes	Yes
16.	Ministry of Industrialization	Yes	-
17.	Ministry of Information and Communication	-	-
18.	Ministry of Internal Security and Provincial Administration	-	-
19.	Ministry of Justice, National Cohesion and Constitutional Affairs	Yes	Yes
20.	Ministry of Labour and Human Resource Development	-	-
21.	Ministry of Lands	Yes	Yes
22.	Ministry of Livestock Development	Yes	-
23.	Ministry of Local Government	-	-
24.	Ministry of Medical Services	-	-
25.	Ministry of Nairobi Metropolitan Development	-	-

26.	Ministry of Planning, National Development and Vision 2030	Yes	-
27.	Ministry of Public Health and Sanitation	-	-
28.	Ministry of Public Works	-	-
29.	Ministry of Regional Development Authorities	-	-
30.	Ministry of Roads	-	-
31.	Ministry of State for National Heritage and Culture	Yes	Yes
32.	Ministry of State for Public Service	Yes	-
33.	Ministry of State for Special Programme	Yes	Yes
34.	Ministry of Tourism	Yes	-
35.	Ministry of Trade	-	-
36.	Ministry of Transport	Yes	Yes
37.	Ministry of Youth Affairs and Sports	-	-
38.	Office of the President	Yes	-
39.	Ministry of water and Irrigation	Yes	Yes
40.	Office of the Prime Minister	Yes	-
41.	Office of the Vice President and the Ministry for Home Affairs	Yes	-

APPENDIX VIII: Documentary Analysis Checklist

1. What are the working documents available in the ministry?
2. What do the documents say about the following aspects of the study?
 - i) E-government infrastructure
 - ii) E-government policy, targets and achievements
 - iii) Online services
 - iv) Obstacles to e-government adoption