

E-Governance and Economic Development in Sub-Saharan Africa: A Case of Nigeria

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Abstract

The study examined e-governance and economic development in sub-Saharan Africa: the case of Nigeria. Secondary data were used for the study. The result indicated high internet use in South Africa (43% to 59%) followed by Senegal (34% to 46%) and then Nigeria (33% to 42%); it showed a positive impact on education, economy, personal relationships, politics and morality in the year 2017. The Internet's contribution to GDP in Africa varies, ranging from a high of 59% in South Africa to a low of 25% in Tanzania. The West African region had the lowest regional index in the 2020 Survey scoring 0.2209 in 2020 as compared with the world average of 0.4939. Cape Verde (0.4221) continues to lead the region, with Nigeria (0.3491) and Ghana (0.3201) taking the top three spots. With respect to service delivery by stages (percent utilization index), Nigeria scored 9.7 and 0.5 in the implementation of stage 4 and stage 5 of the e-government indicator in 2020, while the ranking for the previous years at this two stages were not better. Nigeria's infrastructure Index moved up from 0.0492 in 2010 to 0.0792 in 2020. Nigeria's Human Capital Index also showed an increase from 0.59 in 2010, 0.61 in 2015 and 0.63 in 2020 with her Web Measure Index moving from 0.1303 in 2010 to 0.2241 in 2020. Currently, Nigeria's e-government readiness index is placed at 0.5053 which shows improvement but strictly in an African context. The study recommended that government play a leading role in developing the ICT infrastructure, this is important for successful e-government implementation in a developing economy.

Background to the Study

E-governance encompasses a broad vision of the utilization of Information and communication technology in government businesses with the primary aim of encouraging greater participation in the state, as well as enhancing the relationship between the government and citizens. According to Abasilim and Edet (2015), e-governance deals with the use of information and communication technology by the various government agencies to enhance accountability, create awareness, and ensure transparency in the management of government businesses. The evolution of e-governance in Nigeria can be traced to the formulation of the Nigerian National Information Technology (NNIT) policy in the year 2000. The essence of the policy was to make Nigeria an Information Technology (IT) capable country in Africa and a key player in the information society and also use IT for education; creation of wealth; poverty eradication; job creation; governance; health; agriculture (Ugochukwu and Edet, 2015). By employing online transactions in every sphere of the society, government processes become more streamlined, efficient and less dependent on human physical interactions. Interconnecting various ministries, governments departments, businesses, and citizens electronically, thus, enhancing the process of governance in the society (Adegoroye, Oladejo and Yinus, 2015).

Since independent, Nigeria has been operating its business through manual record whereby a lot of paper work dominated the system (Adeyemo, 2010). Despite the lofty ideas and aims of this new innovation, the country seems weak in the implementation of the e-governance. Some challenges identified include lack of information technology infrastructure; epileptic power supply; lack of trained and qualified personnel, the resistance to change by most public servants. Many scholars who had worked on e-governance did not focus on sub-Saharan African countries in relation with its economic development using Nigeria as a case study, hence the need for this study.

Hypotheses of the Study

The null hypothesis to be tested in this study is as follows:

- HO₁:** E-government impacted negatively on education, economy, personal relationships, politics and morality of selected sub-Saharan countries in year 2017;
- HO₂:** Internet contribution to GDP in Sub-Saharan Africa is Low

Material and Methods

Nigeria is a country with an estimated population of over 180 million (National Population Commission (NPC), 2006). It is divided into six geopolitical regions: North Central, North West, North East, South West, South East and South South. Nigeria lies on the West Coast of Africa and occupies approximately 923,768 square kilometers of land and shares borders with Chad, Cameroun, and Benin Republic. The country is made up of 36 states with Abuja as the Federal Capital Territory. The states and the Federal Capital Territory are divided into approximately 774 local government areas. The spatial distribution of the population is uneven, with the majority (63 percent) of the population living in rural areas and the remaining population (37 percent) living in urban areas (Gberevbie, Ayo, Iyoha, Duruji and Abasilim, 2015).



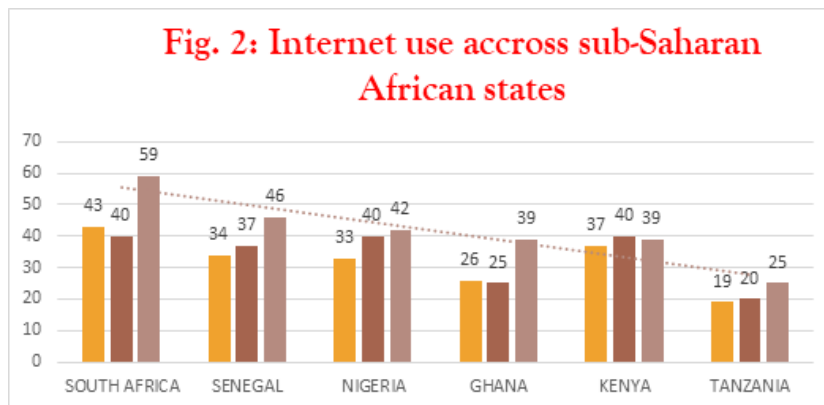
Figure 1: Map of Nigeria. Source: Adeyemo (2011)

Secondary data were used in this study; the Objectives were analyzed using descriptive statistics such as tables, graphs and content analysis.

Result and Discussions

Institutional characteristics of sub-Saharan Africa.

Figure 2: Internet use across sub-Saharan Africa (2013 to 2017).



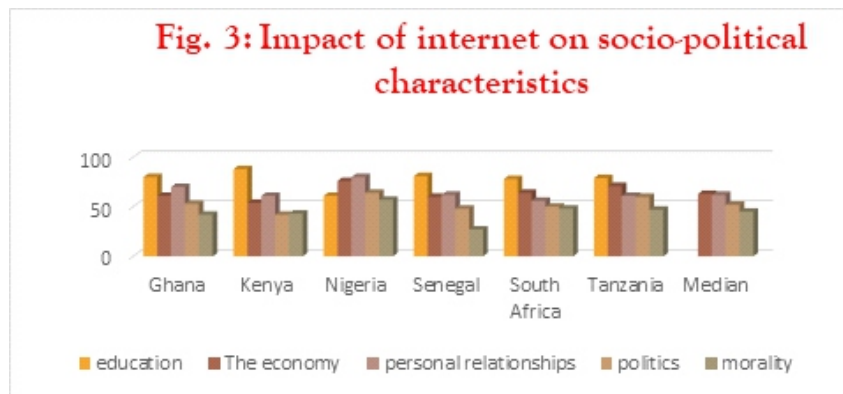
The result from Figure 2 indicates high internet use in South Africa (43% to 59%) followed by Senegal (34% to 46%) and then Nigeria (33% to 42%) among the rest of sub-Saharan countries. Nigeria ranks well relatively, but its best score in terms of use is lesser than the worse score of South-Africa (Cellary, 2008; Fatile, 2012; Godse and Garg, 2009).

Hypothesis one Testing

H0₁: E-government impacted negatively on education, economy, personal relationships, politics and morality in 2017; this is indicated by a median score below 40.0%. From figure 3 below, the median score of education, economy, personal relationships, politics and

morality were above 40.0%, therefore, the null hypothesis was rejected and the alternate hypothesis accepted indicating positive impact of E-government on education, economy, personal relationships, politics and morality in year 2017.

Figure 3: Impact of E-government on education, economy and personal relationships



According to Nchuchuwe and Akhakpe (2015), research findings, in all six countries surveyed, majorities were of the opinion that internet use has positively impacted education in their country. Nigerians are particularly optimistic about the internet's influence: Nearly nine-in-ten (88%) say it has had a good influence on education. In four of the countries, the number of people saying the internet has positively impacted education has risen since 2017 when the question was last asked (Obodo, and Anigbata, 2018). For example, while 81% of South Africans now say internet use has had a positive effect on education, 68% said the same back in 2014. The number of people saying increasing internet use has had a good influence on education also rose by 7 percentage points or more in Ghana, Senegal and Tanzania since 2014. Half or more in every sub-Saharan African country surveyed also view the internet's economic impact in a good light. Indicator for Nigeria show positive, with about three-quarters (76%) saying the internet has had a good influence on their nation's economy (Nwafor-Orizu, Okolo and Eze, 2019). Kenyans are less certain: 54% say the impact has been positive, and 26% say it has been negative. In four of the six countries surveyed, the percentage of people saying the internet has provided economic benefits has risen by 8 points or more since 2014. For example, while a majority of Ghanaians (61%) now say the internet has helped their country's economy, that number was just 43% in 2014 (Olaopa, 2014).

In every country but Kenya, about half or more say the internet has had a good influence on their country's politics. The percentage of people saying the internet has affected politics in a positive way ranges from 64% in Nigeria to just 42% in Kenya. But people's opinions on how the internet impacts politics have improved since 2014 when the question was last posed in four of the countries. In 2014 just 33% of Ghanaians said the increasing use of the internet positively influences politics, compared with 53% in 2017. Opinion has also improved substantially in Nigeria (up 21 points), South Africa (14 points) and Senegal (11 points). On morality, Africans are divided on moral impact of the

internet: A median of 45% say it has had a positive influence, while a 39% median say it has had a negative influence. Nigerians (57%) are most likely to say the internet has positively affected morality in their country. The Senegalese are the most downbeat about its impact; more than half (54%) view the internet as a bad influence on morality in their country (Sharma, 2018; Ugochukwu, and Edet, 2015). This question was last posed to four of the six countries in 2014; since then, Ghanaians' and Nigerians' opinions of the internet's impact on morality have improved by 13 points and 7 points, respectively.

Across the countries surveyed, internet users are generally more likely than non-users to say that the internet has positively impacted society. For example, 53% of South African internet users say the internet has had a good influence on morality in their country, compared with just 42% of non-users. Older and younger people express similar views about how internet users have influenced their countries. Gender, income and education are also important factors in determining how someone feels about the impact of the internet (Kumar, Mukerji, Irfan, and Ajax, 2007).

Hypothesis testing

H0₂: Internet contribution to GDP in Sub-Saharan Africa is Low

Research by the McKinsey Global Institute reveals that the Internet sector makes up an average of 3.7% of GDP in developed economies. The United States, with its large global Internet companies, the sector contributed 3.8% of GDP in 2012. It is lesser in emerging economies, with the internet contributing 1.9% to GDP in 2012. In Africa, the Internet contributes 1.1% to GDP. According to the World Bank, the Internet sector makes up 3 to 5% of the workforce in OECD countries, but only 1% in developing countries. The Internet can have a strong impact on economic growth, and makes up 0.4% of annual GDP growth in developed regions, and 1.3% in developing regions. A study has shown that, 75% of the impact of the internet on growth comes from traditional industries. It has been further shown that a 10% increase in internet use can increase international trade by 0.4-0.6% (Idama, 2019).

Table 1: Sub-Saharan Africa E-Government Ranking

RK	Countries	Index 2010	Index 2015	Index 2020	GR 2010	GR 2015	GR 2020
1	Cape Verde	0.3291	0.3346	0.4221	107	116	104
2	Nigeria	0.2302	0.2756	0.3491	141	139	136
3	Ghana	0.2212	0.2754	0.3201	143	133	138
4	Senegal	0.2121	0.2232	0.2002	145	153	153
5	Gambia	0.1723	0.1934	0.2302	162	163	159
	West Africa*	0.2209		World**	0.4939		

RK= Rank; GR= Global ranking.

Source: UN Global E-Government Readiness Report (2020).

For a comparative study of the E-Readiness Index of the first five West African countries performance in the 2010, 2015 and 2020, UN global e-government survey report was used. Table 1 presents the Global ranking (and Index) of the first five West African countries out of a total of 192 UN member countries surveyed. Tables 4.1 to 4.4 presents the breakdown of the E-Readiness, E-Participation and Service Delivery (percent utilization by stages) reports for Nigeria. While it is to the country's credit that its Global ranking among the 192 member nations of the United Nations had improved from the 141st position in 2010 to 136th position in 2020, this is still a far cry from Cape Verde which still ranks first in the West African sub-region with a ranking of 104 in 2020(Kalu and Masri, 2018). The West African region had the lowest regional index in the 2020 Survey. The region scored a 0.2209 in 2020 as compared with the world average of 0.4939. Cape Verde (0.4221) continues to lead the region, with Nigeria (0.3491) and Ghana (0.3201) taking the top three spots (Ntulo and Otike, 2018).

Table 2: Nigeria (service delivery by stages; percent utilization)

Year	Stage 1 emerging	Stage 2 enhanced	Stage 3 interactive	Stage 4 transactional	Stage 5 connected	Total
2020	34.7	14.6	15.7	9.7	0.5	75.2
% UI	46.1	19.4	20.8	12.9	0.7	
2015	25.5	27.4	24.3	14.0	9.5	100.7
% UI	25.3	27.2	24.1	13.9	9.4	
2010	18.2	17.4	18.9	5.4	3.5	63.4
% UI	28.7	27.4	29.8	8.5	5.5	

% UI = percentage utilization Index.

Source: UN e-government survey, 2010, 2015 and 2020

Table 2 which shows the breakdown for the service delivery by stages (percent utilization) index, the country scored 9.7 and 0.5 in the implementation of stage 4 and 5 of that e-government indicator in 2020, while the ranking for the previous years at these two stages were not better. The service delivery by stages (percent utilization) index is very important because it explains Nigeria's poor ranking in the e-participation index. Hence our use of ICT tools and materials has not been in a manner that provides a conducive environment for e-government service delivery processes (or e-governance) (Ayo, 2014).

Table 3: Nigeria's E-readiness/E-participation index (2010, 2015 and 2020)

Years	Web measure index	Infrastructure index	Human capital index	E-gov. readiness index	E- governance readiness rank	E- participation index	E- Participation rank
2020	0.2241	0.0792	0.63	0.5063	136	0.0654	166
2015	0.2231	0.0519	0.61	0.2754	139	0.0653	39
2010	0.1303	0.0492	0.59	0.2565	141	0.0543	33

Source: Benchmarking E-government (2020)

Nigeria infrastructure index

Table 4: Nigeria infrastructure index

Years	Internet uses index	PC index	Tel lines index	Online Pop index	Mobile subscription index	TV sets index	Broadband index
2020	0.072	0.025	0.0394	0.007	0.392	0.089	0.0003
2015	0.050	0.021	0.2102	0.005	0.302	0.053	0.0001
2010	0.032	0.017	0.1944	0.003	0.167	0.302	0.00009

Source: Benchmarking E-government (2020)

Examining the E-Government Ranking

While there is no doubt that the government is fully committed to the development of ICT and telecommunications infrastructure, and considering the improvements in the sector over the past couple of years, the country's infrastructure ranking should have improved tremendously and it has. Table 3 shows that the country's Infrastructure Index has moved up from 0.0492 in 2010 to 0.0792 in 2020. Some of the reasons for the improvement in Nigeria's infrastructure index are the success recorded in the Nigerian telecommunications sector. Nigeria has a population of about 160 million people, 70% of whom were said to be living in the remote areas of the country (Dada, 2017), however, it now has the fastest growing and most lucrative telecommunications and ICT market in Africa and third in the world behind China and Brazil (Aneke, 2009). As a virgin market experiencing rapid growth, Nigeria has become a preferred destination for international technology investors across the world. Records show that Nigeria's telecommunication and ICT infrastructure has grown astronomically from tele density figures of 0.4 lines per 100 inhabitants in year 2000 (with 400,000 connected lines and 25,000 analogue lines), to tele density figures of 42 lines per 100 inhabitants (representing 59 million active subscribers) in October 2020 (Ndukwe, 2020).

Nigeria's Human Capital Index also showed an increase from 0.59 in 2010, 0.61 in 2015 and 0.63 in 2020. The data used for computing this metrics is from International agencies, it shows that the efforts of government in developing education are yielding positive dividends. Nigeria's Web Measure Index has moved from 0.1303 in 2010 to 0.2241 in 2020, but the increase has not matched the improvements recorded in infrastructure. The UN 2019 benchmarking e-government report (Benchmarking E-government, 2002) had given a detailed assessment of Nigeria's E-Readiness status, stating that Nigeria's government web sites were primarily for public affairs issues, with very little dynamic information to the citizens. Information (or sites) relating to education, social services, health care or women and children specifically were conspicuously absent.

E-Governance Readiness Index

Nigeria's e-government environment: challenges, issues and opportunities

Like many other countries in the Sub-Saharan Africa, Nigeria's government has the desire to implement e-government as a way to reach to its people with a view to promote e participation and e-consultation in the policy/ decision-making process with its citizens. Different projects have been started but met with serious challenges of adoption by the

ordinary citizens. UN e-government Report (2020) classifies the countries in 4 different groups: High e-government capacity (index = 2.00 - 3.25), Medium e-government capacity (1.60 - 1.99), Minimal e-government capacity (1.00 - 1.59) and Deficient e-government capacity (below 1.00). In 2008, Nigeria is categorized as having deficient e-government capacity with an index of 0.26 below Zimbabwe, Congo, South Africa and Burkina Faso in the Africa category (UN Report, 2008). Year 2008's e-government Readiness Index shows Nigeria occupying 158th position out of 182 countries surveyed with an e-readiness Index of 0.22 out of 1 (UN Report, 2008; Ojo, 2014). Nigeria has just launched itself in the world of e-Governance. It is known that in 2005, the country's government literally had no online presence (UN e-government Report, 2008). In 2005, Nigeria was officially recognized as a country with no online presence (with Web Measure Index of 0.0000). Currently, her e-government readiness index is placed at 0.5053 which shows improvement strictly in an African context. The Human Capacity Index and Infrastructure Index are comparatively high and thus increasing her chances of realizing e-government implementation. Nigeria's neighbor, Mozambique, came out as the top African country on e-participation, out of all the countries surveyed, she stood at position 16 with e-participation index of 0.43178. In Nigeria's context, usability, trust and ICT infrastructure have acted as the main impediments to e-government adoption.

The adoption of e-government in Nigeria: Cases Nigeria Immigration Management System (NIMS)

NIMS has been implemented by the Nigeria Immigration Authority as part of its agenda to provide its services efficiently and therefore contribute a substantial amount of tax returns to Nigeria. The need for the authority to introduce this computer-based application was specifically to improve immigration service delivery; reduce the time it takes for the department to issue Permits and Visas and Clearing of persons at the ports of entry by about 50%, ultimately reducing the cost of doing business for the applicants in the country (Simenda, 2009). In line with this, and with a quest to reach more citizens with this improved service, the authority has opened a website where various services offered by the organization can be accessed (<http://www.Nigeriaimmigration.gov.ng>). NIMS are an electronic integrated visa and permit approval system which also has a component of border management within itself just like the website. This means the processing of applications for permits and visas is done through NIMS.

Some of the challenges faced in the full-scale implementation of this project have been the following: (a) it was not easy to bring all the staff on board due to education limitations; (b) lack of linkage between the Nigeria Immigration Website and NIMS. This would have created an atmosphere where clients file in queries and monitor the status of their queries; (c) there is generally inadequate physical ICT infrastructure at various Immigration Offices and Border Controls in the country to facilitate speedy processing of applications and the efficient handling of travelers at all Borders; (d) limitation in the confidence levels of the staff in the new system as it is an IT based system, and how to revamp that confidence; (e) lack of trust in the new system by most people, rendering the newly introduced NIMS platform unreliable; and (f) sustainability of the institutional capacity building in ICTs at various departments countrywide (Sunday, 2014).

In summary, the following table outlines the characteristics of the initiatives for e-government implementation embarked on by the Nigerian Government.

Table 5: Nigeria's e-Governance Initiatives: Strengths and Weaknesses

Parameters	Factors Favouring Adoption	Factors Hindering Adoption
MOH Database (Original HMIS 2010-2020)	<ul style="list-style-type: none"> Contains up-to-date legal information, thus attracts more people to use it. - Highly friendly to ordinary citizens (good usability) 	<ul style="list-style-type: none"> Restricted access to people with internet connectivity - Provision of content in English other than the popular local languages such as Bemba or Nyanja.
Integrated HMIS (2010 to 2020)	<ul style="list-style-type: none"> - Full backing of the Nigerian Government and cooperating partners - Decentralized platforms - On time responsiveness - Used local people during its design phase of the HMIS 	<ul style="list-style-type: none"> Difficult to mobilize funds for full-scale implementation - Rampant costs in training of local population in the use of the software - Lack of political continuity and commitment from the co-operating partners - Poor-grade procurement of IT equipment - Limited ICT infrastructures at local health centers - Exorbitant fees charged by local ISPs for internet connectivity - Unreliable and no guaranteed donor support for project sustainability.
NIMS	<ul style="list-style-type: none"> Faster processes of applications for VISAs, PERMITs, etc. - Convenient and easy method of accessing services - Anytime, anywhere 	<ul style="list-style-type: none"> Lack of synergy between NIMS and the immigration website - Unwillingness of the staff to adopt NIMS - Limited ICT infrastructure - Shaky sustainability framework of the new system

NIMS – Nigeria Immigration Management System

Nigeria Health Management Information System (NHMIS)

As a strategic plan towards reaching out to its citizens, the Nigerian government through the Ministry of Health contracted Health Partners International (HPI) to set up modern, integrated health management information systems (HMIS) database that would be flexible, user-friendly and able to handle all necessary data sources. This was done in the context of e-government – reaching out to citizens and improving the effectiveness of health care delivery system through the strengthening of HMIS.

In the pipeline, there is an implementation of the Hospital Information System (at major hospitals countrywide) and Financial and Administrative Management System (FAMS). HMIS provides an online and active information system for the health system. The HMIS is used particularly to help the medical staff in addressing illnesses in a more convenient and appropriate manner. For the reason of inadequate ICT infrastructure, health centers that are located in remote places do not have chance to benefit from this initiative. The full

potential of this system could not be tapped, in some places with needed ICT infrastructure, the necessary skills and requisites to operate the HMIS may be lacking. In some districts, there may be only one person to manage all the HMIS systems installed at different health centers (MOH Report, 2017). The overreliance on donor support in the management and implementation aspect of HMIS presents a serious challenge to its sustainability.

The two cases presented above have outlined the main impediments to the adoption of e-government in Nigeria. Both cases show that there is limited ICT infrastructure in the government departments investigated, especially in the remote areas. Also, the tools for e-government do not seem to be very friendly because of the computer literacy levels of the people, unwillingness to adopt e-government because the content is mainly presented in English other than common local languages, privacy issues and usability concerns. Generally, the two cases outline the fact that the political will and intention is there to implement e-government because the leaders understand the benefits.

Proposing an E-government adoption model

Figure 4: E-government adoption model

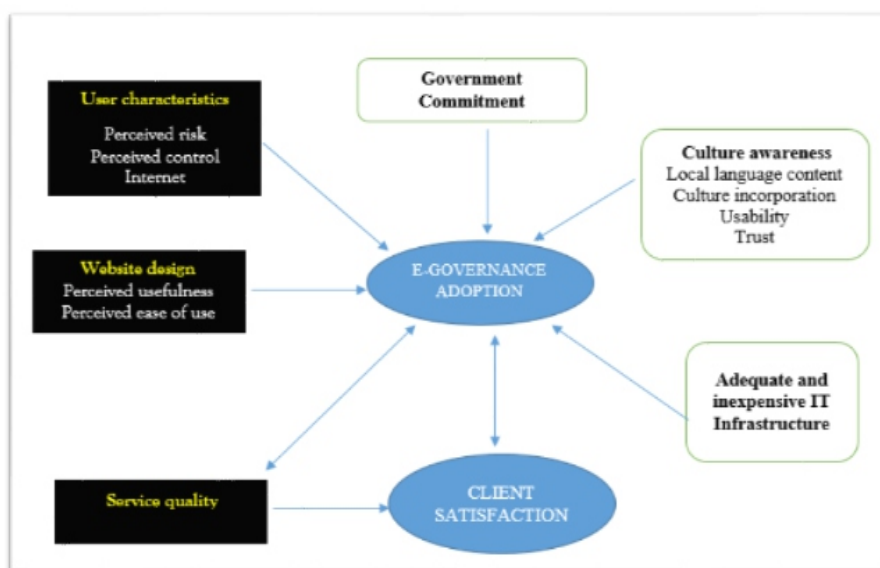


Figure 4 proposed E-adoption Model.

This study outlined the implications of using e-governance in Nigeria. Some of the implications unearthed from the case studies were lack of acceptance of by both the general population and government employees; lack of cultural awareness, lack of trust and usability levels, and limitation in the ICT infrastructure. The model proposed in this study includes the combination of different models that have been designed and tested elsewhere such as the model tested in Canada, Kumar et al. (2007), here; we add that e-governance must be culture friendly. Once the culture content is incorporated into the conceptual model, (including the use of local dialects), the implementation of the e-

government initiative will not only depend on the 'give-and-take scenario' but will also have e-participation of the citizens as a feedback mechanism for policy/ decision making.

Recommendations

In order to achieve a full potential in e-governance, the following recommendations are made:

- i. The government should create an enabling environment for the adoption of ICT in everyday lives of its citizens through qualitative education and ITC's infrastructural support such as constant power supply. Further, the government should encourage development of more fiber-optic network for efficient broadband communication, reducing the rates for internet access through ISPs, and subsidizing the prices for getting Personal Computers (Desktops and Laptops). This can be done indirectly by reducing import duty on internet accessories, computers and computer gadgetry.
- ii. There should be awareness campaigns sensitizing the ordinary citizens particularly those in the rural areas that housed greater chunk of the population on the benefits of e-government, however, for the sub-region of Africa to fully adopt and incorporate e-government as part of their culture, local languages must as of necessity be incorporated into e-governance.

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