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A Model Proposal for E-Government Implementation in Africa: Adaptation from Delone and Mclean Information System Model

By Malang B.S. Bojang
Kocaeli University

Abstract- e-Government or digital government has emerged as the innovation of the 21st century. Both advanced and emerging countries are modernizing and transforming their administrative systems through the use of internet. The benefits of digital government are enormous and it includes greater accountability of the government, increases efficiency, reduces cost, and improves the standard of living for global citizens. However, e-Government in developing countries is still pose with implementation challenges and these have led to massive e-Government project failures. An adaptation model from DeLone and McLean's Information System (IS) success model is developed and proposed as an alternative for e-Government success in Africa. The results of this study show that political and bureaucratic commitment, economic development, right policies, participation in e-Services, and socio-cultural development are sufficient or necessary factors for e-Government development in Africa. Policy recommendation for e-Government development in Africa is also highlighted.

Keywords: africa, e-government, information system model, e-readiness, e-government implementation.

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Abstract- e-Government or digital government has emerged as the innovation of the 21st century. Both advanced and emerging countries are modernizing and transforming their administrative systems through the use of internet. The benefits of digital government are enormous and it includes greater accountability of the government, increases efficiency, reduces cost, and improves the standard of living for global citizens. However, e-Government in developing countries is still pose with implementation challenges and these have led to massive e-Government project failures. An adaptation model from DeLone and McLean's Information System (IS) success model is developed and proposed as an alternative for e-Government success in Africa. The results of this study show that political and bureaucratic commitment, economic development, right policies, participation in e-Services, and socio-cultural development are sufficient or necessary factors for e-Government development in Africa. Policy recommendation for e-Government development in Africa is also highlighted. Using an exploratory approach, data has been collected for this study from secondary sources.

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I. Introduction

Electronic government (shortly e-Government) has been one of the popular terminologies of recent times. Arguably, e-Government is the innovation of the 21st century because numerous nations around the world are improving their administrative system by utilizing Information and Communications Technologies (ICTs) to achieve more prominent productivity in the public sector. While e-Government planned for modernizing and transforming public sector organization (for instance, see, Azab et al., 2009; Becker et al., 2004; Al-Khouri, 2011), the assurances would be of extraordinary advantage to world governments. For some researchers, the advantages of technological developments permit in overcoming wastefulness, to accomplish ideal administration results, giving new chances to Non-Governmental Organization (NGOs), public and private sector interaction, and administration straightforwardness (Saparniene, 2013), cost saving, more responsible administration, building proficiency, shorter handling time, decreasing corruption among administration representatives, bringing down the regulatory burden and more effective political participation (Finger and Pécoud, 2003), enhancing the managerial effectiveness and increasing productivity (Yildiz, 2007).

Much has been said and expounded on e-Government in changing relations among government establishments, organizations and citizens using ICT. The potential benefits are immense, be that as it may, a lot of these objectives are far reach for some third world nations particularly those in Africa. Many are restricted in scope and are not complete, while others face the issue of finance. As indicated by Heeks (2003), about 85% of e-Government initiatives in developing countries can be categorize as failure be it total or partial-i.e projects abandoned at prime stage or desirable outcomes not met. These are troubling fact especially in countries where e-Government is at infancy stage with few resources at their disposal. Similarly, Rorissa and Demissie (2010) contend the absence of literature on e-Government development and further stressed that present studies on e-Government development is not detail enough and hence called for further research.

Few scholars have discussed e-Government issues in Africa and provide an alternative model for its successful implementation. For instance, Heeks (2002) used design-reality framework to examine success stories and failures of digital government in emerging countries. The study by Nkohkwo and Islam (2013) examined the implementation problems of e-Government in Sub-Saharan Africa. However, none of the previous studies focused on or provide an alternative framework for e-Government success in Africa per se. This study tries to fill part of this void in previous research and hope to contribute to the literature by proposing an alternative model which was adopted from DeLone and McLean's Information System (IS) success model for e-Government success in Africa. It is noteworthy to mention that the significance of this study cannot be over emphasized since the renewed model can be developed into a field research for future empirical testing.

II. Brief Review of the Literature

In this study, e-Government refers to the utilization of ICTs to advance more productive and

Author: Kocaeli University, Faculty of Economics and Administrative Sciences, Political Science and Public Administration Department, Umuttepe Campus, Kocaeli/ Turkey.
e-mail: malangbsbojang@gmail.com

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viable government, permit more data access and make government responsive to citizens (Working Group on e-Government in the Developing World 2002: 1). This will not only make government more accountable but also promote an efficient and effective government.

A few scholars have discussed e-Government development in Africa and provide an alternative framework for its successful implementation. For instance, Heeks (2002) used design-reality framework to evaluate success stories and failures of digital government in emerging countries. The study by Nkohkwo and Islam (2013) examined the implementation challenges of e-Government initiatives in Sub-Saharan Africa. None of the previous researches focused on providing an alternative e-Government model in Africa per se. This paper proposed an alternative e-Government model for Africa through learning from success stories of other developing nations.

Digital government is often signaled as a way forward for governments around the world to achieve efficiency and better service delivery to both citizens and businesses. This has made e-Government not just a choice but a requirement for countries aiming for good governance. This is due to the outcomes of adopting e-Government which are enormous-efficiency and effective government, greater participation, transparent government, better services delivery, reduction of massive corruption just to name a few. However, despite these promises, e-Government implementation still faces a threat in many developing countries more so in Africa. The prospect and constraint of e-Government initiative is an exciting area of research (Elkadi, 2013).

Scholarly investigations on e-Government have concentrated fundamentally on the effects and results of ICTs for the private sector (Ndou 2004) and the public sector organization has been sidelined in light of the fact that it will in general fall behind in innovation adoption and business reinvention. However, African governments are beginning to acknowledge the significance of ICTs in government and private sector despite the challenges it faced in adoption of e-Services (see, Heeks, 2002; Thomas et al., 2004; InfoDev, 2004).

In spite of the fact that digital government is a global phenomenon, essentially moving ICT arrangements and related hierarchical concepts from advanced economics to emerging economics seems to be wrong. Arguably, e-Government is an imported concept based on imported designs but it is diffusing slowly within Africa due to inadequate e-Readiness for e-Government (Heeks, 2002; Schuppan, 2008). Similarly, inadequate infrastructure, low literacy, poor economic development, and differing of cultural factors are prevalence in Africa (Rorissa and Demissie, 2010). From the extent literature, e-Government initiatives and models that are implemented in developing countries are derived from success stories and experiences from advanced economics (see, Chen et al., 2006; Mutula, 2013). This model transfer will inevitably fail due to several factors including institutional, leadership, political, cultural, social and financial support.

A fundamental challenge developing nations experience is poor coordination among different government establishments with respect to the insufficiency of ICT strategies and ground breaking strategies to manage e-Government initiatives (Gichoya, 2005). Another test that each government face in actualizing effective e-Government venture is the citizens' acknowledgment and usage. In this manner, teaching and preparing citizens on e-Portal administrations must not be disregard to turn away this challenge (Sarrayrih and Sriram, 2015).

Heeks (2001) argues that countries are confronted with various difficulties. The pre-conditions for e-Government and the strategic challenge to close the digital divide gap to minimize failure and to maximize progress. Heeks (2001) lamented on inadequate e-Government research in emerging economics coupled with e-Government initiatives that succeeds at first, then flops following a year or so-i.e sustainability failure.

Evans and Yen (2006), opined that Africa has the stuff to advance e-Government yet at present is enormously influenced by digital division. There is a colossal dissimilarity between rural and urban societies as far as accessing web and different ICTs are concern (Evans and Yen, 2006: 225). Additionally, poor ICT know-how, legal and privacy issues, wide digital gap, not up-to-date website and poor accessibility are pressing implementation challenges to the fruitful usage of e-Government in African nations (Nkohkwo and Islam, 2013). In many developing nations, citizens adoption of e-Service is very low and this led to e-Government initiative failure (Heeks and Santos, 2009). Again, the two actors involve in e-Government adoption-administrators and designers have contrasting interests. Further, e-Government framework failures could also be blamed for poor adoption in African and Arab countries (Al Athmay et al., 2013:89).

Another crucial test confronting the adoption of digital government in developing nations particularly those in Africa is the issue of trust. In their research on digital government usage in administrations, Carter and Bélanger's (2005) results show that convenience of e-Services, similarity and dependability in the frameworks are noteworthy indicators for citizens aim to utilize an e-Government services. Also, Meftah et al. (2015) argued that there is solid proof of a momentous connection between culture, awareness and trust and adoption of e-Government.

Corruption is among the genuine contextual limitations that face e-Government accomplishment in both advanced and emerging countries. Although corruption exists in all nations, however its power contrasts from nation to nation. Unfortunately, it is

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generally normal in underdeveloped countries. e-Government could be successful in the battle against corruption (Andersen and Rand, 2006). Poor data management, information system failure spurs the high rate of e-Government failure (Heeks, 2002). Dada (2006) likewise contends that it isn't simply e-Government adoption, but information system equally fails to meet desire expectation in developing nations. A considerable number of failures of e-Government could be due to the model obtaining from developed countries to developing nations without considering obstructing elements, for example, financial, social, infrastructural, political and cultural.

III. Alternative Model for E-Government Success in Africa

e-Government is a worldwide phenomenon that has progressively attract the consideration of countries and public policy strategists among others (Azab et al. 2009). e-Government is a need for global governments that are requesting for good administration and financial return. Despite the fact that e-Government frameworks are many, yet not all are made equal. Many are constrained regarding complete methodology for an effective e-Government program. For some, access to reliable internet, low ICT proficiency, lack of political support, and digital gap are generally imperatives that influences the advancement of e-Government. Digital government still poses a challenge to many African governments and hence too many e-Government projects failed. The lack of literature on African e-Government, inadequate evaluation, more focus on case studies, digital divide, and trust can all be partly blamed for e-Government failures in Africa. Conversely, there are insufficient technical and human infrastructure in many third world nations including those in Africa (Heeks, 2002).

The slow diffusion of e-Government in developing African countries combined with deficient e-Readiness (Heeks, 2002) and different socio-cultural factors could be blamed for the high pace of e-Government failures. Heeks (2002) contends that e-Government ventures failed in Africa due to wide digital gap and to tackle these strategic difficulties, relevant actors must sensitize the public coupled with keeping e-Government activities simple, he noted. To this end, an alternative model for e-Government success in Africa is timely and indeed welcoming.

The alternative model is modified from D&M IS success model. The original model has some shortcomings. One fair criticism label against the model is the lack of empirical testing and the need for further validation is recommended. It was initially designed to measured e-Commerce system success and therefore require further testing on e-Government success. First published in 1992, IS model was theoretical and empirical proven in IS research in the 1970s and 1980s (DeLone and McLean, 2003). The IS model has changed and advanced during the last decade and new technological invention has appeared ever since. Therefore, as technology evolves, we must keep abreast with such changes. Scholarly research on evaluation of IS model effectiveness has developed over the years. Arguably, these demerits of the model are fair enough and thus even acknowledged by DeLone and McLean (2003). Another demerit of the model is that lot of questions were and still raise on its effectiveness. Scholars are in contention to find which constructs best suit the model. Further, "DeLone and McLean asked for the model to be validated and updated and urged further scholarly investigation into the model" (Wang and Liao, 2008:719).

Although IS success model has received little research on updating and validating the original model (For example, see, DeLone and McLean, 2003; Wang and Liao, 2008). This study observed from the literature that e-Government services will fit good on the updated model. The study has argued that e-Government success does not depend on technology per se but on citizens. Therefore, information provided needs to be of top quality that could warrant high IT adoption in developing countries especially those in Africa. Further, the model would also be beneficial since it is built on key construct as citizen trust, political will, readiness and willingness of bureaucrats to adopt new technology etc. These variables are crucial to e-Government success in developing nations.

IV. Proposed Model and its Dimensions

The original model is a multidimensional and interdependent construct and there are relations among various dimensions (DeLone and Mclean, 2003). Our model is important because of high data quality which will lead to high adoption rate for both public and private sector. Further, the proposed model contains variables such political and bureaucratic will, trust, sensitization etc. These variables would help to overcome the problems of embracing e-Government in Africa. Can this model be a success in Africa? Arguably, it can fit good in Africa. This paper has observed in the literature that African e-Government lack information quality and their websites rarely updated. Further, inadequate political and bureaucratic support in Africa also leads to massive insecurity among citizens. The proposed model aims at addressing these issues of data security, trust, and privacy laws. The following variables are examined below:

Information quality: It deals with how accurate, timely, complete, vital, and consistency the information provide is to the public (DeLone and Mclean, 2003). How accurate the information is, how timely, relevance and consistent the information is, all affect user intention to

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use. As mentioned earlier, many government websites in Africa provide little input in providing accurate, timely, consistent and relevant information.

System quality: System quality has to do with the individual impact on ICTs. It is about data quality, reliability, functionality, portability, and flexibility. These sub-variables all have bearing on citizens. People may be willing to use portal if the data or information provided is of quality, and the system portable and flexible. For example, Tunisia integrated electronic service delivery of various organizations on the same portal (Mellouli, 2014). The quality of information system coupled with user friendly web portal and ease to use services will improve the acceptance of e-Government.

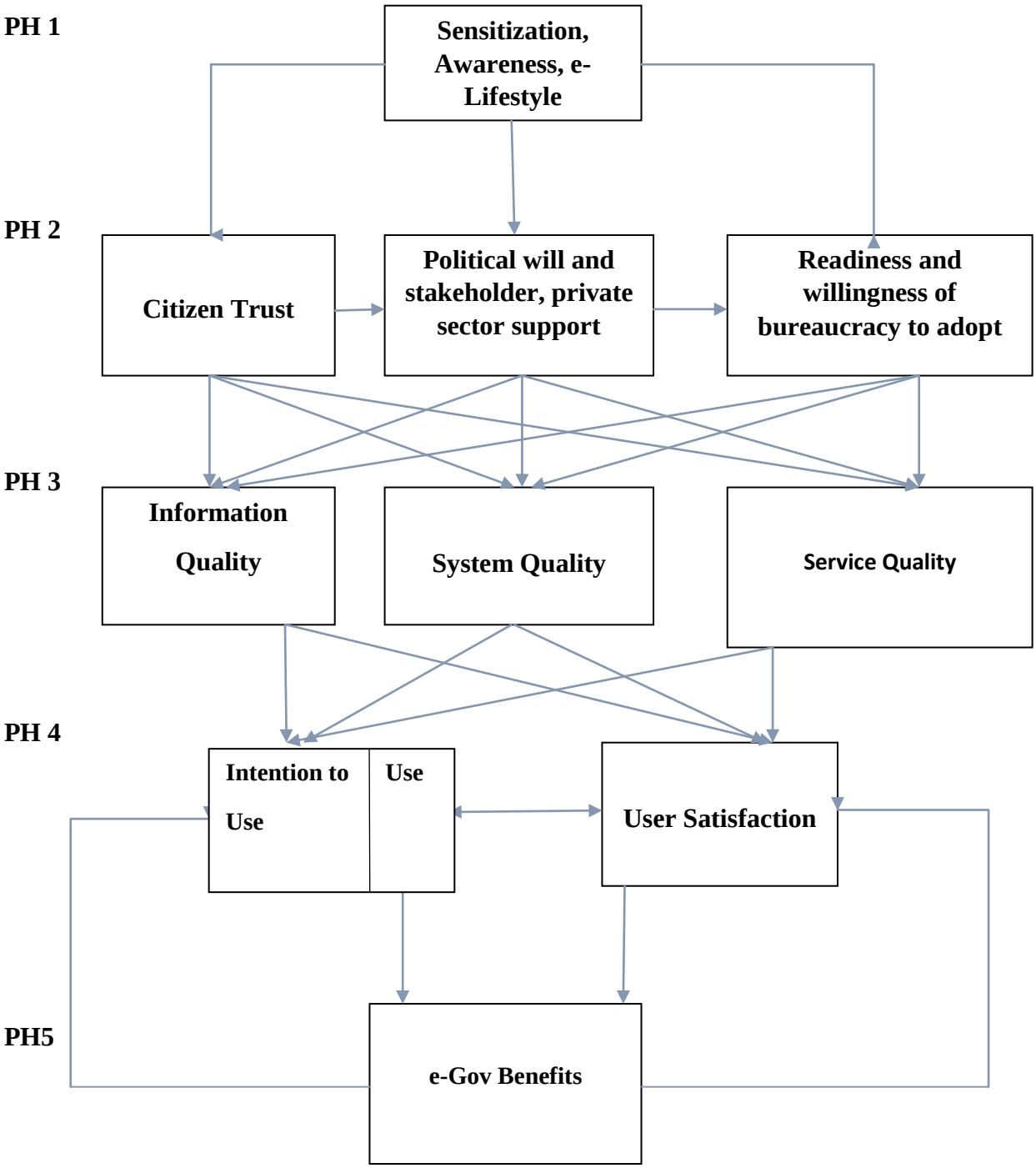

Figure 1: The proposed alternative model for e-Government success adopted from DeLone and McLean (2003)

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Service quality: The effectiveness of IS model depends on service quality. Here the focus should be product. It deals with the expectations and perceptions of the citizens, their satisfaction levels in the service provided to them, and priorities for improvements (e-Government working group, 2007). Accordingly, e-Government triumph to a greater degree depends on "service quality" and arguably the most vital variable of the proposed model (DeLone and Mclean, 2003). *Intention to use and use:* The "Intention to use" deals with people's attitude, whereas "use" concentrate on behavior. People can only use ICT systems if it is easy to use, accessible and quality. These are influential on user perception to use the IS systems. This also depends on government and stakeholder commitment and support coupled with online provision of service to citizens.

User satisfaction: As in the original D&M model, both use and satisfaction of user are related. If government concentrate on increasing satisfaction level of citizen, this will be a positive impact on use and intention to use e-Government systems. (DeLone and Mclean, 2003). Many a times in developing economics, governments hardly update their webpage and as such discourages the public from using such sites.

Net benefit: The impact of e-Government services is huge. These benefits include competitive advantage, strategic benefits, and informational benefits. The ICTs must be able to improve the user's output per time used. Customer satisfaction and the way management regulates work should be improved. e-Government projects usually come with massive promises including service quality.

Sensitization, awareness, and e-Lifestyle: Indeed e-Government initiatives are across Africa but little is known about it. Therefore, there is dire need of public sensitization in the media outlets. Citizen centric e-Services will triumph hence should be all inclusive. This awareness creation will lead citizen to adopt e-Lifestyle and e-Services (for details, see the phases of the model).

Citizen trust: This study has argued that citizen trust depends on privacy laws, data security, data quality and good and timely service delivery, ease to use the system are all positive means to gain public trust. According to Aida and Majdi (2014), Tunisian national culture is characterized by high uncertainty avoidance-explain the level to which members of society feel threatened by unknown conditions. Tunisian now prefer online transaction instead of traditional way of doing business because of the trust and confidence the citizens have on e-Government services. However, there is still issues of trust in the system and this has impacted on adoption of e-Services.

Political and bureaucratic will and private sector support: Political endorsement, stakeholder and private sector support are all crucial in e-Government success in Africa. If only Africa has quality leadership and stakeholder support coupled with willingly bureaucrats can e-Government succeed.

Readiness and willingness of bureaucrats to adopt new technology: This is of fundamental importance for e-Government to be effective in Africa-the will to adopt 'Open Government'. This is one of the success stories of Tunisia. For instance, the Government of Tunisia realized the potentials of digital government in transforming the economy and the public is more than ever willing to adopt e-Government initiatives. The country's e-Readiness is relatively good coupled with good internet, political will and bureaucratic support (Aida and Majdi, 2014).

V. Phases of the Model

In Figure 1 above, the model is adopted from the famous D&M IS model and further developed to suit the context of e-Government in Africa. Although the original model consists of six dimensions: information quality, system quality, service quality, use, user satisfaction, and perceived net benefit, the proposed alternative model is updated and developed to meet Africa's need by adding five necessary dimensions: e-Government initiatives, sensitization, awareness and e-Lifestyle, citizen trust, political will, stakeholder and private sector support, readiness and willingness of bureaucrats to adopt new technology. e-Government is complex and needs to be approach holistically. Therefore, any successful e-Government project must be simple or KISS (Keep It Short Simple). On this note, the proposed alternative model for Africa would be implemented in a phase manner. This would further enable the easy monitoring of the various phases. The model comprises of five (5) interdependent phases (for instance, see the model in figure 1 for further details and dimensions).

In the literature, it is observed that e-Government has already arrived in Africa and is not necessary to include the initiative stage. Although this study tactically excludes initiative stage, however, it is compelled to highlight its significance. e-Government achievement relies upon citizens. The individuals are the most significant resource in any e-Government venture and should accordingly be given priority. Researchers perceived the issue of low-level of citizens' support and appropriation toward e-Government. Although many African governments have long passed the initiative stage, more concentration should be on citizen-centric e-Government services. African governments and different stakeholders must set out on different e-Government activities and should see internet government as a need as well as a precondition for

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good financial return and better administration. e-Government initiatives must provide comprehensive and comparative model for e-Government project. For e-Government advancement, robust strategy and policy for better adoption of e-Government is needed in Africa.

Sensitization, awareness, and e-Lifestyle are situated in the first phase of the model. Awareness of e-Government is about information and acknowledgment human has over e-Government services. Awareness is significant in the accomplishment of e-Government advancement. Behavioral change from the citizens and state officials begins with illumination about e-Government frameworks and its likely advantages. It is about informing and marketing by the government and stakeholders to its citizens and employees. Although e-Government has reached Africa, but it is dismayed to realize that many Africans are still not aware of its presence let alone its potential outcomes. Governments and stakeholders need to sensitized the public about the benefits of e-Government through radio talk shows, TV programs, graphics, billboards, audio clips on government websites for the disables in society. For e-Government to be triumph in Africa, all sectors of the society must be included in the process including the disables. Awareness creation is of great essence to successful e-Government projects in Africa.

Further, citizen ought to be seen as clients and the government and relevant partners should promptly give internet access at a less expensive rate so as to advance e-Lifestyle in Africa. Unless internet is cheap, modest and moderate, digital gap will worsen social orders in societies. The application and acknowledgment of new method of getting things done-an e-Lifestyle, e-Learning, e-Entertainment, e-Communications and e-Transactions are convincing reasons why citizens must be connected (Mahizhnan and Andiappan, 2002).

The second phase in the model are citizen trust, political will, readiness and willingness of bureaucrats to adopt new technology, stakeholder and private sector support. Gharleghi et al. (2015) citing Kim Lean (2008) states that trust comes about if the websites are legal, ethical and trustworthy. This will boost confidence level of the user. Most of e-Government authorities in Africa are facing a major problem in the issue of trust towards digital government and the government themselves because of high level of political corruption. For successful digital government projects in Africa, there must be a high level of trust in government and that of the internet.

Gharleghi et al. (2015) contend that the citizen's confidence in their government also impacted on e-Government development. Confidence in e-Government websites is related to trust in government. This issue of trust must be tackled by governments in Africa for e-Government to be successful. In addition, any successful e-Government projects need political blessings to succeed. Political support and endorsement are necessary condition for e-Government development in Africa. The political willingness also needs to be complemented with stakeholders and private sector support for Africa to succeed. Similarly, the willingness and readiness of bureaucrats to adopt new technological innovations will not only make e-Government projects succeed but will also make their job easier in a more effective and efficient way.

The third phase of the alternative model includes information quality, system quality, and service quality, which arguably all have impacted on people's intention to use ICT systems. The information quality, system quality, and service quality are all necessary conditions for e-Government development in Africa. System quality is measured in terms of ease-of-use, functionality, reliability, flexibility, data quality, portability, integration, and importance. Quality of information is appraised in terms of how accurate, timely, complete, significant, and consistent information is to the public (DeLone and McLean, 2003). Unless African governments incorporate the above-mentioned variables in their e-Government projects, success would remain far-fetching. People can only use ICTs application if the systems are of quality, information provided are of significant and quality and above all the provided services are easy to use and beneficial to the public. These have direct impact on the fourth phase.

The fourth stage is the intention to use, use, and satisfaction of the user. There will be no e-Government without people, therefore the importance of citizen in e-Government cannot be over emphasized. People tend to use system if the information provided is of quality, ease to use, data quality, accurate and consistent information. These are critical issues that pose challenge in many African e-Government services. On many occasion, African governments websites are not updated or poor data management. This study has observed that only if African governments can improve on quality in data, ICT systems, and e-Service, can the overall e-Government development in Africa triumph. The final phase is e-Government benefits. The benefits are enormous. Arguably, if this model is put in to practice in a phase manner coupled with effective monitoring and evaluation plan, it may lead to potential net benefit of e-Government in Africa. Due to the diverse nature of Africa, this study recommends for a further development and validation of this alternative model.

VI. Conclusion

Digital government is the innovation of the 21st century and its importance in transforming the way government does business cannot be over emphasized. We often blamed government of too bureaucratic, slow and lack of innovation in this ever changing world. It is with hope that e-Government could transformed the

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public sector to be more responsive to contemporary demands from the public. The modernization of countries using technology has immense benefits in transforming public administration. These benefits include fast service delivery, accountability and transparency, effective and efficient government, minimize corruption among government employees, and increase business opportunities, just to name a few. However, it is gloomy that these benefits are far fetching for many developing countries especially those in Africa.

An alternative success model for e-Government development in Africa was developed. It was an adaptation from D&M IS model that is further developed to suit the present research objectives. With the alternative model, developing nations especially those in Africa can use it as a guide for future e-Government development initiatives. The results of this study show that political and bureaucratic commitment, economic development, right policies, participation in e-Services, and socio-cultural development are sufficient or necessary factors for e-Government development in Africa. This study recommends its application on the ongoing e-Government initiatives in Africa. e-Government is an interesting and quite new area; therefore, further research is recommended on e-Government adoption, implementation problems and challenges in Africa. Although this research does not choose to measure the various dimensions or variables use in the proposed model, further research is recommended to measure the variables empirically.

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