

Electronic-Governance for Nigeria: Opportunities and Challenges in the Digital Era

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Abstracts: E-government is a worldwide phenomenon to improve service delivery and internal efficiency of governmental organizations. It is defined as a way for governments to use the most innovative information and communication technologies, particularly web based Internet applications, to provide citizens and businesses with more convenient access to government information and services and to provide opportunities to participate in democratic situations and processes. Nigeria has established promising e-Government initiatives with the objective of enhancing the accessibility of government services and information for their citizens. This paper is aim at identifying and analyzing the primary issues, opportunities and challenges that e-government initiatives present for Nigeria.

Keywords: e-Government initiatives, good governance, sustainable development, ICTs.

I. INTRODUCTION

The last decade witnessed a revolution in Information and Communication Technologies (ICTs). This revolution has not only changed the daily life of people but also the characteristics of the interaction between governments and citizens. Such changes, in turn, are quickly being transformed into new forms of government, namely, e-Government [1]. By the mid 1990's the USA, Australia, some European Union (EU) countries together with other countries who were applying New Public Management (NPM), have been early adopters of e-Government programmes [2,3,4]. By the year 2000, most of countries around the world including some developing counties followed the steps of the world most developed economies and deployed their national e-Government projects [5,6,7]. e-Government has become a global phenomenon, similar to many other innovations terms that have arisen during the nascent periods of the Internet age [8]. The United Nations (UN) Report 'Benchmarking E-Government: A Global Perspective' [9] which summarized the global e-Government presence during 2001, concluded that out of 190 UN member states, 88.9% of their national governments use the Internet in some capacity to deliver information and services for citizens and businesses. More recently the UNPAN [10] assessed more than 50,000 characteristics of e-Government websites of the 190 UN member states in order to assess the development of their e-Government projects. E-Government as a term has been widely defined as a tool to achieve better services to citizens.

The initiatives of government agencies and department to use ICT tools and applications, Internet and mobile devices to support good governance,

strengthen existing relationships and build new partnerships within civil society, are known as e-Government initiatives. As with e-Commerce, e-Government represents the introduction of a great wave of technological innovation as well as government reinvention. It represents a tremendous impetus to move forward in the 21st century with higher quality, cost effective services and a better relationship between citizens and government [11]. Many government agencies have taken progressive steps towards the web and the ICT use, adding coherence to all local activities on the Internet, widening local access and skills, opening up interactive services for local debates, and increasing the participation of citizens on promotion and management of territory [12]. The potential for e-Government in Nigeria, however, remains largely unexploited, even though ICT is believed to offer considerable potential for the sustainable development of e-Government. Different human, organizational and technological factors, issues and problems pertain in the country, requiring focused studies and appropriate approaches. ICT, in general is referred to as an "enabler", but on the other hand it should also be regarded as a challenge and a peril in itself. The organizations, public or private, which ignore the potential value and use of ICT may suffer pivotal competitive disadvantages. Nevertheless, some e-Government initiatives have flourished in some developing countries, e.g. Brazil, India, Chile etc. What the experience in these countries shows, is that government effectively exploit and appropriate the benefits of ICT, but e-Government success entails the accommodation of certain unique conditions, needs and obstacles. The adaptive challenges of e-Government go far beyond technology, they call for organizational structures and skills, new forms of leadership,

transformation of public-private partnerships [13]. Moving away from these assertions, the aim of this paper is to identify and analyze the primary issues, opportunities and challenges that e-Government initiatives present for Nigeria. The insights presented in the paper are based on web based research of studies undertaken in some countries like- Brazil, Jamaica, Guatemala, India, and the Philippines, which have already explored e-Government initiatives. In these cases, we observe different applications and opportunities for e-Government, such as, for tax administration (Jamaica, Guatemala); better services to customers, businesses and stake holders (Brazil, India) and e-Government for transparency and business efficiency (Philippines, India).

The paper is organized as follows. In section 2, e-government literature review with different definitions of e-Government and its components are described in detail. In section 3, how ICT can be used as a tool is explain. We evaluate and assess the potential of e-Government projects and initiatives in section 4. The paper went further to analyze the principle challenges that may be encountered in section 5. While section 6

II. LITERATURE REVIEW

The advent of the internet, digital connectivity, the explosion and use of ecommerce and e business models in the private sector are pressuring the public sector to rethink hierarchical, bureaucratic organizational models. Customers, citizens and businesses are faced everyday with new innovative e-business and e-commerce models implemented by the private sector and made possible by ICT tools and applications, are requiring the same from governmental organizations. In ref [14] citizens are referred to as customers for governments, since governments need to empower rather than serve, to shift from hierarchy to team work and participation, to be mission oriented and customer focused, and to focus on prevention rather than cure. Governments worldwide are faced with the challenge of transformation and the need to modernize administrative practices and management systems. Recently the public sector has began to recognize the potential opportunities offered by ICT and e-business models to fit with citizens' demand, to offer better services to citizens and to increase efficiency by streamlining internal processes. The traditional bureaucratic paradigm characterized by internal productive efficiency, functional rationality, departmentalization, hierarchical control and rule based management, is being replaced by competitive knowledge based economy requirements such as: flexibility, network organization, vertical/ horizontal integration, innovative entrepreneurship, organizational learning, speed up in service delivery, and a customer driven strategy. These new paradigms thrust the shift towards e-Government paradigm which emphasizes

coordinated network buildings, external collaboration and customer services [15].

A. *Electronic-Government Defined*

E-Government means different things for different people. Some simply define it as digital governmental information or a way of engaging in digital interactions with customers. For others e-Government simply consists of the creation of a web site where information about political and governmental issues is presented. These narrow ways of defining and conceptualizing e-Government restrict the range of opportunities it offers. One of the reasons why government initiatives fail is related to the narrow definitions and poor understanding of the e-Government concept, processes and functions. E-Government is a multidimensional and complex concept, which requires a broad definition and understanding, in order to be able to design and implement a successful strategy. The following provides the principal definitions of e-Government used in the paper. E- Government is:

- “the electronic interaction (transaction and information exchange) between the government, public (citizens and businesses) and employees” [16].
- “the government owned or operated systems of information and communication technologies that transform relations with citizens, the private and/or the government agencies so as to promote citizens empowerment, improve service delivery, strengthen accountability, increase transparency, or improve government efficiency” [17].
- “the transformation of public sector, internal and external relationships through net enabled operations, IT and communications, in order to improve: Government service delivery; constituency participation; society” [18].
- “an internet-worked government which links new technology with legal systems internally and in-turns links such government information, infrastructure externally with every thing digital and with everybody, i.e., the tax payers, suppliers, business customers, voters and every other institution in the society” [19].
- “the public sector’s use of the most innovative information and communication technology, like the internet, to deliver to all citizens improved services, reliable information and greater knowledge in order to facilitate access to the governing process and encourage deeper citizens participation” [20].

The crucial element of all these definitions is the use of ICT tools to reinvent the public sector by transforming

its internal and external way of doing things and its inter-relationships with customers and the business communities. The analysis of these definitions allows us to individuate the main issues and components that characterize an e-Government framework, such as:

- i. Transformation areas (internal, external, relational);
- ii. Users, customers, actors and their interrelationships (citizens, businesses, government organizations, employees);
- iii. E-Government application domains (e-services, e-democracy, e-administration)

Transformation Areas Component: The above definitions encompass three critical transformation areas of e-Government [21]. They are: *Internal*- the use of ICT to improve the efficiency and effectiveness of internal functions and processes of government by interrelating different departments and agencies. Thus, information can flow much faster and more easily among different governmental departments, reducing processing time, paper work bottlenecks, and eliminating long, bureaucratic and inefficient approval procedures. Internetworking among different governmental departments improves internal efficiency by enabling time reductions for using, storing and collecting data, reduction of labor costs and information handling costs, as well as the speed and accuracy of task processing. *External*- which opens up new possibilities for government to be more transparent to citizens and businesses, giving access to a greater range of information collected and generated by government. ICT creates also opportunities for partnership and collaboration among different governmental institutions. E-government blurs the lines not only within government agencies but also between government and those that touch it. *Relational*- ICT adoption may enable fundamental changes in the relationships between the citizens and the state and between nation states, with implications for the democratic process and structures of government. Vertical and horizontal integration of services can be realized enabling the integration of information and services from various government agencies to help citizens and other stakeholders get seamless services.

E-Government Web of Inter-Relationships Component: The target of e-Government encompasses four main groups: citizens, businesses, governments (other governments and public agencies) and employees. The electronic transactions and interactions between governments and each group constitute the e-Government web of relationships and the respective four main blocks of e-Government are: Government to Citizens (G2C); Government to Business (G2B); Government to Government (G2G); and Government to Employees (G2E). The relationships, interactions and transactions between government and employees in fact constitute another large e-Government block, which requires a separate and very careful handling. Many people today refer to employees as internal customers

and as a result, in order for an e-Government initiative to be customer oriented and centric; it has to take into account needs and requirements of this group as well. More specifically, these e-Government blocks can be characterized as follows:

Government to Citizen (G2C)- deals with the relationship between government and citizens. E-Government allows government agencies to talk, listen, relate and continuously communicate with its citizens, supporting, in this way, accountability, democracy and improvement to public services. A broad array of interactions can be developed ranging from delivery of services and the provision of welfare and health benefits to regulatory and compliance oriented licensing. G2C allows customers to access government information and services instantly, conveniently, from everywhere, by use of multiple channels (PC, Web TV, mobile phone or wireless device). It also enables and reinforces their participation in local community life (send an email or contribute to an online discussion forum).

Government to Business (G2B)- consists of the electronic interactions between government agencies and private businesses. It allows e-transaction initiative such as e-procurement and the development of an electronic marketplace for government. Companies everywhere are conducting business-to-business ecommerce in order to lower their costs and improve inventory control. The opportunity to conduct online transactions with government reduces red tape and simplifies regulatory processes, therefore helping businesses to become more competitive. The delivery of integrated, single-source public services creates opportunities for businesses and government to partner together for establishing a web presence faster and cheaper.

Government to Government (G2G)- refers to the relationship between governmental organizations. For example, national, regional, and local governmental organizations or with foreign government within the state to effectively deliver services and allocate responsibilities. Online communications and cooperation allows government agencies and departments to share databases, resources, pool skills and capabilities, enhancing the efficiency and affectivity of processes.

Government to Employees (G2E) - refers to the relationship between government and its employees. G2E is an effective way to provide e-learning, bring employees together and to promote knowledge sharing among them. It gives employees the possibility of accessing relevant information regarding: compensation and benefits policies, training and learning opportunities, civil right laws, etc. G2E refers also to strategic and tactical mechanisms for encouraging the implementation of government goals and programs as well as human resource management, budgeting and accounting.

E-Government Application Domains Component: The full exploitation and implementation of these complex webs of inter-relationships requires three main application domains for e-Government [22]. They are:e-

Administration. automation and computerization of administrative tasks and for realization of strategic connections among internal processes, departments and functions. **e-Citizens and e-Services** - to realize connections and interrelationships among governments and citizens and to deliver automated services. **e-Society** - enable relationship and interactions beyond boundaries, among public agencies, private sector and civil community in general.

These three application domains should be considered as overlapping and e-Government can be found in the overlapping area of these three application domains, demonstrating the complexities and heterogeneities needed to be handled for assuring e-government success.

III. E-GOVERNMENT FOR NIGERIA

It is now widely accepted that ICT offers increased opportunities for economic development and plays a critical role in rapid economic change, productive capacity improvements and international competitiveness enhancement. The range of choices and opportunities in Nigeria is expanding. ICT is believed to be a powerful enabling tool to address some of the key barriers and challenges for entering the global economy and for future growth potential. It can transform old challenges and create unprecedented possibilities for sustainable economic development, just as it has done for businesses in the industrial world. ICTs offer the potential not just to collect, store, process and diffuse enormous quantities of information at minimal cost, but also, to network, interact and communicate across the world [23]. Econometric studies have found evidence of a strong positive relationship between ICT investments and GDP growth illustrating the importance of ICTs for development, both in the commercial and the public sectors. Nevertheless, ICT represents a high risk- the risks deepen the digital divide and to further marginalize them with the networking revolution. Countries which fail to embrace and use ICT tools for entering the global network and for addressing developmental needs, will suffer pivotal disadvantages in form of information poverty that could further widen the gap in economic status and competitiveness.

Recognizing the power of ICTs, many countries, assisted by international organizations for development, have started building and encouraging e-strategies and initiatives to address a wide range of economic, social, technological, infrastructural, legal and educational issues. The G8 on Digital Opportunities Task Force and UN Task Force on ICT Access [24], have evidenced e-Government as one of the priorities based on the decisive role it would play for ICT accessibility. Consequently, e-Government initiative have flourished in many countries reaping the advantages and opportunities of ICT and the knowledge economy for collaboration, networking, better services, efficiency and affectivity. Based on these assertions, this paper tried to evaluate and assess the potential of e-

Government initiatives for Nigeria as well as identify and analyze the principle challenges that may be encountered.

IV. OPPORTUNITIES OF E-GOVERNMENT

Benefits assured by use and application of e-Government in Nigeria are the same as those in developed countries. The differences between these two groups could result from the fact that many potential benefits of e-Government are not reaped as consequence of limited use of e-Government. The following are the main opportunities e-Government can triggered in our country.

A. Increase the Capacity of Government

The use of ICT for the reorganization of internal administration transactions, communications, and interrelationships and for easy information flow and transfer offers considerable opportunity to increase government capacity. Intranets allow different departments to share databases of common customers and to pool skills and capacities of their members for problem solving. These facilities in turn will pledge faster information flow and transfer, quicker and cheaper provision of goods and services, faster and better decision making processes, and unplugged paper bottlenecks. This approach assures benefits for businesses, which become both consumers of government services and providers of goods and services to the government.

B. Transparency, Anticorruption and Accountability

E-Government helps to increase the transparency of decision making processes. In many cases, e-Government offers opportunities for citizens to directly participate in decision making by allowing them to provide their own ideas and suggestions in forums and online communities. If websites are designed carefully and openly, they can be valuable resources for transparency as citizens, businesses and other stakeholders should be able to see political and governmental information, rules and policies. Previously it was often necessary to go directly to governmental offices to obtain information, but now this information should be available on the web. The availability of a diversity of publications regarding the activities of the public administration, as well as economic and legislative aspects, increases the transparency too.

C. Improve the Quality of Decision Making

Community Creation, forums, continuous interaction and communication between government and its citizens contribute further to the decision making process. By means of active participation in political and government discussions, citizens can contribute their own ideas, and share their knowledge and information. This will in turn lead to building trust in government and improving the relationships between the government and the governed. Considering citizens

as governmental customers, listening and understanding to their needs and requirements, is essential for a better decision-making process. The appropriate use of shared data and information by all governmental agencies and departments offers the possibility to make quick decisions thus to serve the community better.

D. Cost Reduction and Efficiency Gains

Putting services online substantially decreases the processing costs of many activities compared with the manual way of handling operations. The appropriate application of ICT may possibly reduce the number of inefficiencies in processes by allowing file and data sharing across government departments, thereby contributing to the elimination of mistakes from manual procedures, reducing the required time for transactions. Efficiency is also attained by streamlining internal processes, by enabling faster and more informed decision making, and by speeding up transaction processing.

E. Quality of Service Delivery to Businesses and Customers

In the traditional model of public service delivery, the procedures are long, time consuming and lack transparency. A business that wishes to obtain a license or a permit has to fill out a number of application forms, has to visit a number of different offices and spend a considerable amount of time. If a citizen wishes to be issued with a certificate or any other official document, he or she will have to travel to the central government office, go to different offices and spend a lot of time for a simple service. The consequences are high costs and citizen business dissatisfaction. An e-Government initiative, on the other hand, which puts government services online, thereby reducing the bureaucracy, offers round the clock accessibility, fast and convenient transactions, and obviously enhances the quality of services, in terms of time, content and accessibility.

F. Network and Community Creation

As argued before, an e-Government initiative requires a complex web of interrelationships among government, customers, businesses, employees and other governmental agencies. Moreover, the very nature and function of e-Government require a network approach to put together skills, technologies, information and knowledge that span the boundaries of different governmental agencies. It is generally impossible to find all of them in one single governmental agency. The need for learning and training, for example, requires a partnership between government agencies/departments and universities or research institutions. The provision of integrated services at one contact point requires the cooperation and collaboration of different departments and agencies, horizontal and vertical integration, and therefore the creation of a large and diversified network of relationships. The successful use and diffusion of ICTs in the public sector involves a collective, multidisciplinary and dynamic learning process. Moreover, the realization of electronic transactions triggers network creation among private companies, financial institutions, telecommunication and ISPs. On

the other hand, an e-Government initiative enables community creation, giving citizens and business the possibility to participate in forums, and in decision making processes, contributing actively to different political and governmental discussions.

G. Promote Use of ICT in other Sectors of the Society

Continuous interaction and communication between government and its stakeholders contributes to the creation of awareness about the potential contribution of ICT to local community activities. In this way, e-Government plays a vital role, not only in facilitating market-led initiatives but also in initiating the process of capability building and in coordinating the actions of a large number of interested stakeholders [25]. In fact, one of the main benefits of an e-Government initiative consists of the promotion of ICT use in other sectors. In order for e-Government staff to interact, transact and communicate electronically with businesses, citizens and other stakeholders, it is necessary to mandate the use of ICT tools and applications. For a government-to-business electronic transaction to occur, the business itself needs to make use of electronic equipment. On the other hand, financial institutions have to create secure and reliable methods for electronic transactions. The development of new technological and management capacities required for e-Government functionality encourage the development in turn of new training courses and modules in schools and universities trying to supply the required skills and capabilities to the market.

V. CHALLENGES FOR A SUCCESSFUL IMPLEMENTATION OF E-GOVERNMENT

While it is evident that e-Government and ICTs, in general, are powerful drivers of wealth creation and growth, there remain many challenges which hamper the exploration and exploitation of its opportunities. The multi-dimensionality and complexity of e-Government initiatives implies the existence of a wide variety of challenges and barriers to its implementation and management. The followings represent the main challenges for e-Government development and implementation in Nigeria. The paper briefly introduces each of these challenges and offers some policy implications for their management.

A. ICT Infrastructure

ICT infrastructure is recognized to be one of the main challenges for e-Government. Internetworking is required to enable appropriate sharing of information and open up new channels for communication and delivery of new services [19]. For a transition to electronic government, an architect, that is, a guiding set of principles, models and standards, is needed. Many countries suffer from the digital divide and they are not able to deploy the appropriate ICT infrastructure for e-Government deployment. The digital divide between richer countries and developing ones is large with high income economies having 416 personal computers per

100 people and low income economies only 6 per 1000 [17]. The development of basic infrastructure to capture the advantages of new technologies and communication tools is essential for implementing e-Government. Different access methods, such as remote access by cellular phones, satellite receivers, kiosks, etc., need to be taken into consideration by government in order that all members of the society can be served irrespective of their physical and financial capabilities. However, an ICT infrastructure does not consist simply of telecommunications and computer equipments. E-readiness and ICT literacy are also necessary in order for people to be able to use and benefit from e-Government applications. Having the education, freedom and desire to access information is critical to e-Government efficacy.

B. Human Capital Development and Life Long Learning

A major challenge of an e-Government initiative is the lack of ICT in public sector. This is a problem in Nigeria, where there are few qualified staff and inadequate human resources training has been a problem. The availability of appropriate skills is central for successful e-Government implementation. E-Government requires hybrid human capacities: technological, commercial and management. Technical skills for installation, maintenance, designing and implementation of ICT infrastructure, as well as skills for using and managing online processes, functions and customers are necessary. To address human capital development issues, knowledge management initiatives are required to focus on staff training, seminars, and workshops in order to create the basic skills for e-Government handling. However, the human capability development doesn't end up with the acquisition and achievement of basic initial skills. Instead, lifelong learning is an essential prerequisite as the rate of change increases and new technologies, practices and competitive models emerge.

C. Partnership and Collaboration

Collaboration and cooperation at local, regional and national levels, as well as between public and private organizations, are important elements in the e-Government development process. Nevertheless, collaboration and cooperation are not simple to realize. Governments often exhibit considerable resistance to open and transparent systems as they try to preserve their authority, power and hierarchical status. Citizens distrust their governments, especially where there has been a history of dictatorship, political instability or large-scale corruption. To ensure that the public and stakeholders will be partners in the e-Government effort, it is important to try to build trust in government. Collaboration between the private (assuming that there is a private sector) and public sectors is needed too, in order to provide resources, skills and capabilities that the government lacks.

D. Policy Issues

Processing of e-Government principles and functions require a range of new rules, policies, laws and legislatives changes to address electronic activities including electronic signatures, electronic archiving, freedom of information, data protection, computer crime, intellectual property right and copyright issues. Dealing with e-Government means signing a contract or a digital agreement, which has to be protected and recognized by a formalized law, which protects and secure this kind of activities or processes. Establishing protections and legal reforms will be needed to ensure, among other things, the privacy, security and legal recognition of electronic interactions, and electronic signatures. Hence, Governments all over the world need to tackle the design and development of a public key infrastructure, which will guarantee secure transactions between organizations and individuals.

E. Leadership Role

Leadership is one of the main driving forces of every new and innovative project or initiative. Since e-Government is a complex process, accompanied by high costs, risks and challenges, public organizations are generally resistant to the initiation of change. A leading player (organization, institution), which is able to understand the real costs and benefits of the project, to motivate, influence, and support other organizations and institutions, is required. Leadership is necessary before, during and after project implementation. Before the project is initiated, leadership is needed in order to explain the concept, the model and create awareness; during the project, leadership is needed to manage change and support the project; and after the project, it is needed to pledge the required flexibility and adaptability of the initiative. Top leadership involvement and clear lines of accountability for making management improvements are critical to overcoming organization's natural resistance to change, marshal the resources needed to improve management, and building and maintaining the organization wide commitment to new ways of doing government [26].

F. Change Management

Change management issues must be addressed as new work practices, new ways of processing, and performing tasks are introduced. E-Government, if correctly designed does not simply save costs and improve service quality; instead it revolutionizes and reinvents the government processes and functions. Change management can be divided into two sub concepts: Change Management Approach and Management of Resistance to Change. *Change management approach* refers to the change management procedures established within organizations. Ref. [27] identifies culture as the primary driver of strategic organizational change. Being aware of an organization's culture is already a big step towards a higher capacity to change. Hierarchy is the most traditional of cultural values of a government bureaucracy, in many ways of its defining feature. In particular, intranets and the sharing of information throughout organizations can challenge hierarchies and

can only really benefit an organization that develops a more networked approach; ICT is distinguished by its network character. Employee resistance to change is still the biggest barrier to successful change. Employees fear changes in general and ICT applications in particular as they believe that ICT would replace them and so cause job losses. Moreover, it is very difficult in a short time to turn off traditional methods of working and learn new ones. Addressing resistance successfully means ensuring the existence of incentives for employees to learn and change and the establishment of well-structured plans that embrace employee participation throughout all stages of a change process.

G. Strategy

One of the main challenges for an e-Government project is the establishment of an appropriate and context tailored strategy. Every project or initiative needs to be rooted in a very careful, analytical and dynamic strategy seems to be a very difficult task, requiring a focus on many aspects and processes, a holistic vision, long-term focus and objectives. Many public institutions limit their activities to a simple transfer of their information and services online without taking into consideration the re-engineering process needed to grasp the full benefits. The government must have a clear strategy to overcome the barriers to change.

VI. CONCLUSIONS AND WAYFORWARD

In the new economy, underpinned by revolutionary changes in science and technology, information and knowledge has become a key factor in economic competitiveness. Nigeria must pursue a more active role in the formulation of national policies and strategies to promote the information economy, to real huge benefits in terms of economic and social development. E-Government is believed to play a fundamental role to this end. It does not only facilitate market-led initiatives but it also plays a major role in initiating the process of capability building and in coordinating the actions of a large number of interested stakeholders. It offers the potential of reshaping the public sector activities and processes, building relationships between citizens and the government, enhancing transparency, increasing government capacity and providing a “voice” for those outside the government. Nevertheless, the ability of Nigeria to reap the full benefits of e-government is limited and is largely hampered by the existence of many political, social and economic hindrances. But, despite the barriers and impediments experienced, the reference cases provided here show that Nigeria should and could take advantages of the ICT revolution. The following reveals some important tips to consider for a successful design and implementation of e-government initiatives in Nigeria.

E-readiness assessment- Start with an e-readiness assessment study which permits stakeholders to understand the current level of human resources and skills as well as the main impediments within the

country’s borders. Based on the outcomes of this assessment, it is possible to produce strategies and action plans for building human resource capability, legislative frameworks, institutional infrastructures, technological infrastructures and accessibility for all in a tailored and effective way.

Raise awareness among public and private organizations- Organize workshops, events, seminars, conferences with the objective of raising awareness about real opportunities and benefits that the ICT revolution can bring. Prepare for long-term solutions to problems by ensuring the availability of appropriate training programs for future management of technological and business changes.

Think small, be agile and fast- Begin with feasible pilot projects, tailored to specific contexts. Build up steadily the qualifications necessary for facing hindrances. Be prepared to make the required changes on the road. Agility and flexibility assure the success.

Stimulate collaboration and coordination among government departments and agencies to increase efficiency and effective in process handling. Address challenges and opportunities in strong partnership with private organizations, major donors, research institutions and universities, and support cross fertilization of ideas, solutions and knowledge.

Invest in human development- The success of e-initiatives depends largely on human skills and capabilities. Accordingly, education and training initiatives must be considered as priority actions. Staff need to be trained to handle new processes and activities; they have to be given incentives (not necessarily monetary) to prevent the brain drain of skilled people; and they need to feel part of the organization by engaging in the decision making process. Some basic training needs necessary to be provided to community members, in general, in order for them to be able to use new facilities for accessing electronic information and services.

Show sensitivity to local realities by assessing and evaluating different alternatives, ways and solutions for digital government development including mobile telephones, kiosks, and multi-channel access to services. Find viable solutions to ensure the effective participation of the community in the information economy.

Adopt a holistic and comprehensive approach, with clear vision and strategy to overcome the barriers and challenges for change. Integrate e-Government with other development strategies and policies to ensure a broad base diffusion. The active role of top leaders is crucial especially at the earliest stages, to raise awareness, make ICT development a national priority, build and maintain wide commitment and involvement at public and private levels.

Prepare to manage knowledge and change- Establish knowledge management processes and tools to ensure storage, usage, easy retrieval of strategic information and knowledge for better and fast decision making process, for further adaptation and development, for realizing the necessary improvements and always

search for better and innovative value added services and solutions.

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