A STUDY ON "ICT AS A POTENTIAL TOOL TO ENHANCE PUBLIC ADMINISTRATION SYSTEM IN GHANA – A CASE FOR THE MINISTRY OF COMMUNICATIONS"

By

Eric Osei-Wusu

THESIS

Submitted to
KDI School of Public Policy and Management
in partial fulfilment of the requirements
for the degree of

MASTER OF PUBLIC POLICY

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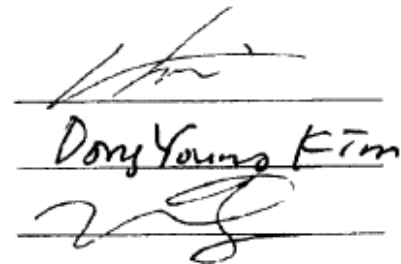in partial fulfilment of the requirements

for the degree of MASTER OF

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Approval as of August, 2013

ABSTRACT

A STUDY ON "ICT AS A POTENTIAL TOOL TO ENHANCE PUBLIC ADMINISTRATION SYSTEM IN GHANA – A CASE FOR THE MINISTRY OF COMMUNICATIONS"

By

Eric Osei-Wusu

Information Technologies (ICTs) have been recognized by developing countries as one of the tools needed to tackle many bottlenecks affecting today's public services of various governments.

It is noted that most of the least developed countries and developing countries are faced with inadequate robust ICT backbone Infrastructure. This has become evident, as a result of limited policy implementation capacity amongst many governments of the African continent. The lack of comprehensive policies and limited country legislations tend to increase most countries risk of investment, reducing the sectors' responsiveness and competitiveness, and retarding the socio-economic development of many African countries.

The research obtained about seventy-five (75) respondents for the sample size to represent staff of selected Ministries, Departments and Agencies (MDAs) and industry players from an estimated number of over 10,000 people working in the ministerial enclave including both formal and informal for government and the private sector.

The research involved the use of primary and secondary data gathering; the primary included the design of questionnaires and the use of random sampling to

gather views of respondentsto provide a clear picture of how MDAs are using the ICT tools within the enclave to inter-relate to one another to ascertain the impact of the e-government projects benefiting them. The secondary data collection also sought to gather information from already compiled documents from the MDAs and other industry players as well as other information from books from libraries, Institutions, government publications, articles and online sources.

The research study was based on the various sector policies and initiatives of the Ministry of Communications and its various stakeholders to experience the usage and impact of ICT in the Public Sector.It subsequently revealed that the introduction of ICT and e-government applications in the MDAs has tremendously helped to promote the use of ICT in the day-to-day administration of governance, helping them to generate growth to contribute to the improvement of most government functions to facilitate efficiency and transparency.

Furthermore, the need and use of ICT in the government administrations could potentially improve the operations of the public administration system and positively influence the development of the country. It was ascertained that these could be achieved when there is effective policies with the right human resources capacity required in the facilitation of the monitoring processes and managing of the existing technology.

However, the researchers identified that the nation can promote ICT and bring efficiency and effectiveness in the public and civil administrations of government through effective public private partnership and sustainable collaboration. The research identified the need for governments to develop the appropriate policies, institutions, human resources, and technologies to ensure the usage of ICT to enhance public administration in Ghana

DEDICATION

This thesis is dedicated to my late Mum and Dad of the Osei-Wusu fame, who could not wait, for a mightier Hand needed them most. Forever, I will be proud of them. I also owe my heartfelt gratitude to my sweet Honey, Erica Osei-Wusu and my son Nana Kwasi Jeffery Osei-Wusu, whose love and affection as well as encouragement urged me to pursue hard for this great honour.To my lovely siblings, Nana Ama, Godfred, Sylvia, Mabel, Frederick, Victoria and William, I say "ayekoo" for your prayers, support and best wishes, I love you all. To my buddy and Bro, Lawyer Eric Osei-Mensah, I say thanks!

ACKNOWLEDGEMENT

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ABBREVIATIONS AND ACRONYMS

CIC	Community Information Centre
DSL	Digital Subscriber Line
FON	Fibre Optic Networks
GDP	Gross Domestic Product
GIFEC	Ghana Investment Fund for Electronic Communications
GDP	Gross Domestic Product
GoG	Government of Ghana
HDI	Human Development Index
ISPs	Internet Service Providers
ITU	International Telecommunication Union
ICT	Information Communications Technology
ICT4AD	Information Communications Technology for Accelerated Development
LAN	Local Area Network
MAN	Metro Area Network
MDAs	Ministries Departments and Agencies
MDGs	Millennium Development Goals
MTEF	Medium Term Expenditure Framework
MPs	Members of Parliament
MoC	Ministry of Communications
MoFEP	Ministry of Finance and Economic Planning
M&E	Monitoring and Evaluation
NCA	National Communications Authority
NCBC	National Communication Backbone Company
NITA	National Information Technology Agency
PCMEU	Policy Coordination, Monitoring and Evaluation Unit
PPP	Public Private Partnership
PA	Public Administrations
PRAAD	Public Records and Archives Administration Department
VRA	Volta River Authority
RBME	Results-based Monitoring and Evaluation System
SPSS	Statistical Packages for Social Sciences

UNDP	United Nations Development Planning
WACS	West African Cable System
WiMAX	Worldwide Interoperability for Microwave Access
WSIS	World Summit on the Information Society

1.0   INTRODUCTION

1.1   BACKGROUND

In this era of technological advancement, it is believed worldwide that Information Communications Technology (ICT) is one of the major tools that the various civil and public services of governments can use to facilitate numerous government projects and programmes. This view is also shared by Mosley-Lefatola (2011) who indicated that Electronic Government is basically how government administrations can take advantage of Information and Communication Technologies (ICTs) and make good use of available tools and systems with the aim of providing better and improved services to citizens as well as businesses.[1] He observed that it is important for governments to meet the needs of its citizens by increasing the proportion of services they deliver electronically, so that it can benefit employees as well as citizenry. This suggests that ICTs can enhance the public administration system by making services to the public very accessible.

In the view of Morsley-Lefatola (2011), ICT has become one of the most important means of communication in all areas of life.[2]An effective communication tool that can bring together various government businesses together to perform effectively.It is recognized that the regular and effective application of ICT tools in the day-to-day administration of government services can provide various public administrations the requisite ICT needs and assistance toenhance the performance of the employees. In Ghana, the public administrative system will be able to engage in

[1]Blake Mosley-Lefatola, State Information Technology Agency.Institutional Capacity Building for Successful e-Government. Pretoria: SITA, 2011: pp. 4-5.
[2]Ibid., 5.

transformation processes when there is increasing use of ICT, which could enable various public administrations deliver services across the country with the aim of achieving a more efficient and effective service delivery. Ambali (2010) has suggested that increasing application of ICT often supports citizens and businesses to deliver public servicesmore effectively, efficiently and democratically.[3] To a large extent, ICTs have been recognized as potential tool to transform governments. Therefore, all things being equal, it is expected that governments from developing countries including Ghana can become a driving force for innovation, if there is direct application and use of ICT in the day-to-day delivery of services to ensure that there is quick and efficient service delivery to meet the expectations of governments and the general public.

Governments around the world have adopted ICTs as a potential tool to facilitate the achievement of their socio-economic development agenda. However, implementation of ICT policies and initiatives are often saddled with bottlenecks. Ambali (2010) acknowledged these bottlenecks as a major concern, especially, when governments do not take advantage of the positive effects of ICT and apply and pursue them to the latter. He therefore cautioned that this poses a negative effect on government services.[4] In effect; the implementation of ICT in the service delivery of government administrations iskeyto the easy facilitation of government businesses. It is therefore very important that in the implementation processes much attention is given to all the necessary policies and initiatives as well as actors and stakeholders to ensure maximum achievement of expectations.

In Ghana, the Government through the National Information Technology Agency (NITA) has already deployed an e-Government Infrastructure network to

[3]Ambali, Abdul R. 2010. E-government in Public Sector: Policy Implications and Recommendations for Policy-makers. Research Journal of International Studies. 17(11): 11-12.
[4]Ibid.

connect over 1,050 Government offices nationwide in the first phase of the implementation. This is in pursuit of policy initiatives to effectively ensure that there is adequate coverage of the network nationwide. The two phases of the project will ensure complete linkage between the Ministries, Departments, and Agencies (MDAs) across the entire country.

1.2   STATEMENT OF THE PROBLEM

In the contemporary era, ICT has become a driving force and a vehicle which is propelling many developed and developing countries to attain an improved digital economy for accelerated socio-economic development. ICT application has become a common phenomenon in the developmental agenda of many countries all over the world.

In Ghana, however, ICT applications are not adequately exploited with regard to the delivery of public services, especially to ensure effective collaboration between MDAs all over the country. Even within urban communities, some public offices are not connected, thereby making service delivery ineffective. In order to ensure the various public administrations can access ICT applications there should be a well connected ICT infrastructure as the MDAs are all over the country.

The various ministries and their agencies as well as other governmental organizations are expected to coordinate effectively under one platform to make government information accessible and transmittable, yet the required electronic network to facilitate the delivery of government business to the public is inadequate. Therefore the dissemination of government information to the public and effective coordination to promote government's business is not well managed.

Furthermore, it is identified that there is inadequate and unreliable Internet broadband network access to meet the demand of the entire population, and to further provide a platform to enable the Government Public Administrations to transport and transmit government information.

It is therefore not surprising when the International Telecommunications Union (ITU) indicated that there is growing Internet use all over the world, yet they agreed that the percentage of users in developing countries looks a bit low. It is not surprising that statistics indicated that in 2008 individuals using the Internet in Ghana was only 4.27 percentof the entire population. In three years down the lane, thus in 2011, individuals using Internet in Ghana had increased to a whopping 14.11 percent of the population estimated around 24 million.[5] Even now that there is an increase, it still looks limited in relation to the total population vis-à-vis the internet access and the ICT situation.

According to statistics from the National Communications Authority (NCA), (NCA, 2013) Ghana currently has an "undersea broadband capacity of approximately13,140 Gigabytes per second (GBps) or 13.14 Terabytes per second (TBps)."[6] "Major telecom players have invested enormously in submarine fibre optic cables to increase the bandwidth capacity in the country, yet it remains inadequate. Since Broadband is not fully controlled by government, the cost is expensive, between $500 and $1000 per month to the end user either on a shared or dedicated basis" (NCA, 2011).

TheGhana National Broadband Strategy seeks to achieve a "10% annual increase in broadband penetration and an increase in broadband bandwidth from 256 kilobit per second kbps) to 2 Megabit per second (Mbps) and mechanisms to reduce

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[5]The National Communications Authority.The Ghana National Telecommunication Regulating Agency.n.d. www.nca.org.gh.
[6]Ibid.

the cost of broadband to achieve a penetration of 50% by 2015 from the current 0.2%. It is therefore estimated that a penetration is expected to contribute about 6.9% GDP growth over 5 years and approximately one in every two Ghanaians would have broadband access."[7] This to a large extent explains efforts government is strategically putting in place to meet the broadband demands of the entire population including the MDAs. The question that one would want to find out is whether these measures over the years could commensurate the capacity needs of the MDAs and further address the inadequacy being experienced over the years upon what the government terms as a success story.

In the day-to-day operation of the MDAs in the public services of Ghana, ICT will importantly support government to facilitate the delivery of many services to the public in order to enhance relationship between citizens and government. This could build an effective and efficient public administration system and also go a long way to strengthen Ghana's democracy. The availability of ICT equipment to support broadband application for easy access is critical in the process. Broadband Internet holds potential for the country as it can provide the various public and civil servants with the required capacity to access ICT in their functions. It can to a large extent help government in maintaining transparency and accountability.

It is noted that various initiatives are being undertaking by the Government of Ghana to ensure that the entire country, especially, the rural communities are provided access to the internet. One laudable initiative is the Community Information Centre (CIC) programme which is aimed at bridging the digital divide in the country. Notwithstanding, though the initiative is laudable, the project implementation is not being given the necessary attention and support to serve as an additional platform to

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[7]Ministry of Communications, Ghana.Statistics on Rural Fibre Optic Backbone Link and Data Centre.Provided by Danida Business and Finance, 2012. P.18.

provideservices to the MDAs. For instance, departments and agencies in the rural communities who often do not have easy access to ICT facilities due to limited ICT infrastructure and limited bandwidth to sustain Internet connectivity in these areas.

Therefore, the question that could be asked is if the necessary ICT infrastructure is not made available to the MDAs, how can the employees have adequate access to ICT services and products to do their work. Notably, accessibility can provide them with advanced ICT products and services to efficiently enable them make better-informed decisions both in businesses and other relevant ventures and improve the country's productivity and developmental agenda. For example, the various MDAs will have better access to government information readily available on the Internet. Therefore, it would not matter which part of the country an employee is located, the person can easily access information to become equipped to provide better services to the public.

Therefore, will the fibre optic network and the broadband nationwide be well managed to meet the demand of the MDAs nationwide? How will the availability of broadband encourage government to deploy the necessary ICT infrastructure, products and services, with internet connectivity to meet the demand of the various Government administrations to promote an enhanced efficient service delivery?

The provision of broadband is important to promote the agenda of governments in improving ICT and making it a potential tool in the public administration systems. Therefore, relevant industry players are very keen to provide adequate broadband capacity to facilitate ICT services. According to the Ghana Investment Fund for Electronic Communications (GIFEC), (GIFEC, 2011), government is providing support to telecom providers to enhance the "last-mile access

to Ghanaians, in whichGreater Accra alone has about 850 masts."[8] It is noted that most of these infrastructure are owned by Internet Service Providers (ISPs), mobile operators and others, who eventually transfers the cost to the customers.

The provision of affordable and cost-effective ICT infrastructure by government and the private sector goes a long way to make access to ICT services easier. In this regard, lack of effective collaboration often affects the desire of government in bringing and making ICT services and infrastructure available to facilitate easy access and availability to help speed up governance.

Information flow amongst the various MDAs are very important to bring efficiency in service delivery; therefore the constant availability and linkage of the various MDAs on a uniformed platform to enable them share relevant government information on the Web should be prime focus of government to bring efficiency in the MDAs. Therefore, how effective could the available ICT initiatives and strategies be supported and monitored to ensure that the MDAs benefit from the government's national ICT agenda?

It is noted that indeed, all these intriguing questions could be addressed if adequate measures are put in place by government to speed up the processes to link up the various MDAs to the national broadband network that is being implemented.

1.3   OBJECTIVE OF STUDY

The objectives include the following:

i. To identify policy and programmes targeting ICTs deployment and exploitation in public institutions.

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[8]Ghana Investment Fund for Electronic Communications,An Agency Responsible for Administration of Funding Mechanism for Ghana's TelecommunicationSector.2011. n.p.http://gifec.gov.gh.

ii. To use ICT4AD policy to enhance service delivery in the Public Administrative System.

iii.To assess the impact of using ICT to enhance the evaluation capacity of MDAs.

iv. To evaluate the effects of the introduction of e-government in MDAs.

v. To assess the effect of improved ICT skills on the service delivery of the Public Administration System.

vi. The use of Public Private Partnership in deploying ICTs for MDAs.

1.4   SIGNIFICANCE OF STUDY

ICTs are globally accepted as major tools for technological advancement to enhance government capabilities, to bring services closer to its people. The World Summit on the Information Society (WSIS) in its Declaration of Principles, Article 41 acknowledges that, "ICTs are an important enabler of growth through efficiency gains and increased productivity, in particular by small and medium sized enterprises (SMEs)".[9] This means that countries can develop if there is major effort at developing their Information Society to equip the citizen to enhance productivity.

According to CAFRAD &ACBF (2004, 2-3), when the various public institutions adopt and use ICTs in administering governance there is likely to have positive outcome creating the expected changes that can effectively help in managing service. It further indicated that most African countries are employing e-government applications in the administrative and governance reform programmes but in spite of these efforts, the expected results cannot be achieved.[10] This implies that even though

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[9]World Summit on the Information Society. Declaration of Principles (Building the Information Society: a global challenge in the new Millennium. Geneva: WSIS, December 2003. n.p. http://www.itu.int/wsis/docs/geneva/official/dop.html.

[10]CAFRAD/ACBF, Regional Workshop on e-Governance to Enhance Reforms and Public Service Performance in Africa, 2004, 2-3.http://unpan1.un.org/intradoc/groups/public/documents/CAFRAD/UNPAN018796.pdf.

ICT infrastructure and services are necessary for the efficiency of public service delivery, the overall management deficiency among other factors must be prime concern of governments in order to achieve the best benefits.

In assessing the need for ICT infrastructure in the running of public administrations and to meet the expected results, this research will significantly help in determining how the government can tap international best practices with a systematic approach to address the limited access and application of ICT in the MDAs.

In identifying citizenry and stakeholders in the direct involvement of "decision making and process of implementing e-governance"[11] as highlighted by Stoiciu (2011), the project will make a step further to ascertain strenuous efforts the government is making to ensure an all-inclusiveness in the building of robust ICT infrastructure and services This research will underscore the various ICT policy initiatives being undertaking that has direct impact on the various MDAs.

1.5   HYPOTHESIS

The research will seek to find out the following:

I.   Adequate ICT application in the delivery of services in the public administrations of Ghana will promote efficiency in the execution of government policies and programmes.

II.   The availability of skilled and knowledgeable human resource is significant to the deployment and exploitation of ICT tools and services.

III.   The need to promote the use of e-government in the operations of the public administrative set up can provide ICT tools to improve the effectiveness of service delivery.

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[11]Andreea, Stoiciu. 2011. The Role of e-Governance in Bridging the Digital Divide. UN Chronicle. n.p. http://www.un.org/wcm/content/site/chronicle/home/archive/issues2011.

IV.   The expansion of adequate ICT infrastructure and promotion of modernized telecommunication systems in MDAs will require an effective Public Private Partnership.

1.6   LIMITATIONS OF THE STUDY

The research is based on primary and secondary data. Yet, due to time constraints,gathering the initial primary data was done through online one-on-one information gathering from Ghana, (i.e. the Ministries of Communications and other related MDAs that require ICT in the delivery of services). The researcher had to travel back to Ghana to complete the primary data gathering, which wasted time a bit.

Though most of the respondents at the Ministry of Communications were open to provide a lot of information to meet the expectations of the researcher, some of them felt reluctant to provide accurate information for fear of being victimized. Others also perceived that there was little impact the research could make to bring lasting solutions to the numerous ICT problems they anticipate will persist for years. Hence, were not open to voice out the true state of ICT in the Ministry.

Most of the information was obtained from the secondary sources, including several websites, books, journals and reports.

In spite of the above limitations, due to the assistance from the Program of Study Committee team, the researcher put in much effort and applied the appropriate methods to achieve results.

1.7   ORGANIZATION OF THE STUDY

The research will be organized under five chapters.

The first chapter will deal with the introduction of the study examining the background of the study, statement of the problems, objectives of the study, its significance limitations and the organization of the work

The second chapter will review the literature review on the subject area. The chapter will highlight on the potential role of ICT in an economy, status of ICT in Ghana, and ICT policy ICT infrastructure and services to meet the demand of the MDAs in enhancing their operations. It will further identify and assess public private partnership (PPP) as an optionto facilitate theimplementation of e-government in Ghana. It will end with the relevance in committing funding and human resources into the delivery of efficient ICT services to the MDAs.

Chapter Three will indicate the research methodology which involves research approach and design, study area, population and sampling. It will assess the various types of data collected and the procedures that were employed for the data. The research will critically assess the various methods to be employed to deal with the various claims on the study.

The fourth chapter will identify the various findings, and undertake the necessary analysis of the various questionnaires administered.

Chapter five will provide the way forward by providing a summary on the study, and further draw conclusions and recommendations that could enhance the public administration system in Ghana.

CHAPTER TWO

2.0   LITERATURE REVIEW

2.1   INTRODUCTION

Modernization through the introduction of new technologies worldwide has increasingly brought new ways of thinking and addressing issues of life which ICT has a special role to play. ICT is recognized as a tool that greatly has a lot of influence in today's world. Kusi, (2012) defined ICT as"hardware and software for gathering, storing, retrieving, processing, analyzing and disseminating information electronically. He acknowledged that it is a fusion of telecommunication and computing with the aim of processing and disseminating information."[12] ICT as a tool has become a critical factor that it goes a very long way to determine the effective and efficient way users can through the technology, expertly perform their functions.

2.2   THE POTENTIAL ROLE OF ICT IN AN ECONOMY

AtifIqbal and R.K. Ragga (n.d.) argued that "governments around the globe are awakening to adapt Internet technology for e-government. Some countries show more interest in adapting technology and some are slow in the process." In analyzing e-governance application in some developed countries, they highlighted that the "United Kingdom launched UK Online in September 2000," with the aim of becoming "knowledge economies." This system helped get a number of their citizens to have access and become used to a number of online serviceswhich can promote e-government application in governance and further enhance service delivery.

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[12]Kusi, Acheampong Emmanuel. 2012. The State of Information and Communication Technology and Health Informatics in Ghana. Online Journal of Public Health Informatics 4(2):1-2. http://ojphi.org.

Lundvall and Johnson, (1994), stated that when ICTs are improved they facilitate and enable a country's global competitiveness with the right structure to transform businesses and organizations to ensure effective competition. They called for organizations to facilitate knowledge building in the structure of the e-government processes.[13]

2.3   ICT APPLICATION IN PUBLIC ADMINISTRATION IN GHANA

According to Gil-Garcia and Luna-Reyes, (2003), "e-Government is defined as the use of information and communication technologies in government to provide public services that can help improve managerial effectiveness and to promote democratic values and mechanisms; as well as a regulatory framework that facilitates information intensive initiatives and fosters the knowledge society."[14]

In addressing the role of ICT and electronic government, Christian von Haldenwang observed that recently, majority of organizations are giving much attention to e-government and a large number of countries are making efforts to formulating national "e-government strategies." She stressed that many "governments and international organizations" are committing resources into the enhancement of public sector ICT access, enabling governments to strategically "cipher for modern, efficient, transparent, participatory and customer-oriented government."[15]

Importantly, the government of Ghana isrolling oute-government network infrastructure which is designed to reach all 170 Districts; Regional Administrations and Regional Coordinating Councils, District Assemblies, Hospitals, Police Stations,

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[13]Valentina Dardha Ndou. 2004. E-Government for developing countries: opportunities and challenges. The Electronic Journal on Information Systems in Developing Countries 18(1):1.
[14]International Telecommunications Union.Electronic Government for Developing Countries. Geneva: ITU, 2008. Pp. 15.
www.itu.int/ITU-D/cyb/app/e-gov.html.
[15]Christian von Haldenwang. European Association of Development Research and Training Institutes.Electronic Government (E-Government) and Development. Ljubljana: EADI, n.d. pp. 1.
http://www.eadi-online.org/fileadmin/WG_Documents/Reg_WG/haldenwang.pdf.

Schools, Public Universities, as well as Polytechnics. The infrastructure is to bring MDAs on a commonplatform to be able to better secure databases and enjoy high speed connectivity for their operations

It is noted that service delivery in the government administrations in Ghana has been by old and unfashionable methods which are often classified as outmoded. Most offices in government administrations have access to telephones, computers, fax machines, among other personally-owned devices to facilitate communication and delivery of services. It is noted that when these mediums of communication and interactions are not well linked with appropriate internet connectivity it becomes difficult to facilitate and promote quick transaction and execution of government services.

In assessing "e-Government of Local Administration in Hungary", Istvan, Toza and Balazs, Budai (n.d.) explained that "e-government in public administration can be interpreted as the appearance and application of electronic data-conveying devices (communication)." They mentioned the availability of "wireless, telegrams, radio transmitters and receivers, telephone, telex and even fax and considered them as 'ancient' means of e-government."[16]

Governments need to recognize the need for modern application of Internet and the use of computers to support these facilities to create new electronic devices capable of providing a number of government services electronically to the citizenry.

Stoiciu (2011) noted that the deployment of ICT is always a major concern of governments, and emphasis on the development of e-services, that should be "directly linked to the active involvement of citizens and the private sector in the delivery of public services." He observed that "there is a need for the consideration of

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[16]Istvan, Tózsa and Balazs, Budai. Electronic-Government of Local Administration in Hungary.pp. 3.n.d.https://docs.google.com/viewer:unpan1.un.org/intradoc/groups/public/documents/untc/unpan.

stakeholders in actively participating in decision making for better understanding and support to e-government process."[17] In effect, ICT development and e-application can support service delivery to promote effective governance, directed at meeting the needs of the people.

It is observed that lack of ICT knowledge of a number of public and civil servants is a major obstacle for the smooth application of ICT in the administration of government projects and programmes in Ghana, and can affect the easy and quick access to ICT to facilitate efficient delivery of services to the citizenry.

According to the Lundvall and Johnson, most of the jobs and posts in the various public administrations utilize traditional methods, not considering "the e-government application". He noted that "education regards e-government as a tool which is not yet available, and not yet demanded by society,"thus the requisite workforce with the skills and knowledge to implement the right policies and programmes are not adequate and in some cases not available to effectively apply the right tools. Therefore the writers propose the need for the "restructuring of the workflow; the jobs and posts in the system of public administration" to suit the aspirations of the policy drive of the ICT oriented MDAs.[18]

2.4   THE STATUS OF ICT IMPLEMENTATION IN GHANA

Governments worldwide have recognized that countries cannot achieve the requisite socio-economic development without the required ICT application which plays an important role in facilitating the process. This has ledto many developed and developing countries streamlining their policies and programmes to strategically facilitate the transformation of their economic systems into knowledge-based and

[17]Andreea, Stoiciu.2011. The Role of e-Governance in Bridging the Digital Divide.UN Chronicle. n.p.
[18]Istvan, Tózsa and Balazs, Budai. Electronic-Government of Local Administration in Hungary.pp. 8.
https://docs.google.com/viewer:unpan1.un.org/intradoc/groups/public/documents/untc/unpan.

information age economies. In this vein, ((Dzidornu, 2003) noted that"developed countries such as the USA, Canada and a number of European countries as well as Asian countries including India, China, Singapore, Malaysia, Thailand, Sri Lanka, South Korea, Japan, and Vietnam; and Central and South American countries such as Brazil, Chile, Costa Rica and Mexico, among others including Australia, havedeveloped these policies and plans that are being implemented across their respective economies and societies."[19]It is from this that Ghana set out a roadmap and took the initiative in joining forces with the private sector and other emerging nations to make some strides in the area of ICT.

In public administration, inadequate access to ICT facilities and lack of application of the right tools leaves much to be desired, as employees are not able to manage and apply ICT from home via distance network, to speed up work and save time and energy of travelling, and in the long run, reduce bureaucracy. There are no effective e-learning and e-training facilities available to equip employees to further enhance their skills after formal education of graduate and post-graduate levels. Therefore effective ICT application, both at home and in the office have been completely missing, thus, in effect, does not also encourage effective interactive communication amongst public agencies for efficient service delivery.

The Ministry of Communications acknowledges that easy access, availability and affordability of ICT systems and equipment will promote development in Ghana; therefore several initiatives are being undertaking to help improve the effectiveness of the telecommunications sector and to a large extent ensure efficiency of service delivery in order to facilitate new opportunities for telecommunications users. Thus,

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[19]Dzidonu, Clement K. (Prof.). An Integrated ICT for Accelerated Development Policy and Plan Development Framework for Ghana, Volume 1, Report Commissioned By United Nations Economic Commission for Africa (UNECA). (June, 2003) pp. 88.

"there should be strong demand to intensify the use of Information and Communication Technology, especially, towards the attainment of the Millennium Development Targets."[20]

2.4.1 ICT Policy Implementation in Ghana

According to the preamble of the Ghana ICT for Accelerated Development (ICT4AD) Policy, "Nations worldwide have recognized the developmental opportunities and the challenges of the emerging information age characterized by ICTs."[21] The policy document has indicated the need to deploy technologies capable of driving national development efforts, as it is being explored worldwide by a number of developed and developing countries. And their aim had been to ensure that ICTs are effectively developed, deployed and also exploited efficiently in all developmental processes.

Therefore, over the years, various Ghanaian Governments have been partnering the private sector entities to facilitate the smooth implementation of the ICT policy which seeks to address key developmental challenges by supporting all other sectors of the economy in the emerging "information, knowledge and technological"era. TheGovernment of Ghanathrough Ministry of Communications is responsible for the ICT4AD Policy, making efforts at implementing numerous strategies for the sector and the economy as a whole.

It has been argued that the policy which is to provide the foundation for ICT application to every sector of the economy, will among other things, equip the citizenry, especially, the public and civil servants, with the capability required to apply ICT to the day-to-day administration of the government. Accordingly, ICT as a

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[20]Ghana E-Health Strategy: A document Prepared by the Ministry of Health of Ghana. pp. 8. www.moh-**ghana**.org.
[21]Information Communication Technology for Accelerated Development Policy (ICT4AD Policy): A Policy Statement Prepared by the Ministry of Communications of Ghana, (Ghana G-Pak Ltd., Accra, June 2003) pp. 6.

tool to a large extent empowers government employees to actively undertake a number of public policy formulations as well as their implementation, being provided with the right platform to collaborate with the private sector and the citizens to facilitate transparency in governance.

In the ICT4AD policy document, it is noted the policy has an "objective of supporting an ICT-led socio-economic development process to transform Ghana into an information-rich and knowledge-based society." the policy is to "provide details of specific policy commitments the country is to undertake in relation to what needs to be done towards the realization of a vision to transform the economy and society through the development, deployment and exploitation of ICTs, to support the country's socio-economic development process."[22]

There are various action plans expected to be developed to implement the strategies from 14 identified priority focus areas which are still not achieved over the years and may have a huge effect on the implementation process. Meanwhile, the government requires ICT to bring the public and civil servants together and collaborate with the private sector to actively transform the country. As it is outlined in the policy, "a nation's capability to accelerate its socio-economic development process and gain global competitiveness" will very much depend on how "it can develop, use, exploit and sell information, knowledge and technology."[23]

This means that the policy plans and strategies outlined which serves as a roadmap for the country do not end there, but will require the needed government commitment, attention and implementation to pave way for the necessary ICT infrastructure to facilitate the work of the public servants. As highlighted by Ndou, (2004) that ICTs are the greatest potential tools to facilitate operational efficiency,

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[22]Ibid. 6.
[23]Ibid.,7.

and that both the "private and public organizations have to reinvent themselves" and become innovative "to achieve the requisite strategic competitive advantage"[24] the nation needs.

2.4.2 Internet Access in Ghana

According to the Internet World Statistics, as at June, 2012 (Internet World Statistics, 2012) Africa is lagging behind the developed countries in terms of Internet access to promote socio-economic development(Figure 1 and Table 1) below. It is noted that "out of over 1 billion population about 160 million people have access to internet which represents 15.6% of the world's total internet penetration."[25] The situation presents a major challenge to Africa as a continent and Ghana as a country, if the whole continent can only share 7% of the total percentage of the world Internet users, with the others controlling a whopping 93.0%. This has a huge effect on the country's provision of broadband services often considered to be of high cost to government in deploying the last-mile access solution to the entire Ghanaian users including the MDAs

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[24]Valentina Dardha Ndou. 2004. E – Government for Developing Countries: Opportunities and Challenges. The Electronic Journal on Information Systems in Developing Countries 18(1):1.
[25]Internet World Statistics **-** Miniwatts Marketing Group**.**2013.
www.internetworldstats.com.

Figure 1: *Internet Usage Statistics for Africa*

Source: *Internet World Statistics - Miniwatts Marketing Group, 2013* www.internetworldstats.com.

Table 1: *Internet Usage Statistics for Africa*

INTERNET USERS AND POPULATION STATISTICS FOR AFRICA						
Africa Region	**Population (2012 Est.)**	**Pop. % of World**	**Internet Users, 30-June-2012**	**Penetration (% Population)**	**Internet % Users**	**Facebook 31-Dec-2012**
Total for Africa	1,073,380,925	15.3 %	**167,335,676**	15.6 %	7.0 %	51,612,460
Rest of World	5,944,465,997	84.7 %	**2,238,182,700**	37.7 %	93.0 %	924,331,500
WORLD TOTAL	**7,017,846,922**	**100.0 %**	**2,405,518,376**	**34.3 %**	**100.0 %**	**975,943,960**

Source: *Internet World Statistics - Miniwatts Marketing Group, 2013* www.internetworldstats.com.

In Ghana, with about 25 million population, about 3.5 million people have Internet Access, thus Ghana has almost 14.1% Internet Penetration of the overall

Penetration of the entire Africa. Statistics from the website of Ghana's Telecom Regulator, National Communications Authority (NCA, 2013) indicated a mobile subscription of 26,464,964 subscribers(over 100% penetration) which presents an opportunity to move in mobile technology deployment for e-government.

Table 2: *Ghana Internet Usage and Population Growth*

YEAR	Users/Subscribers	Population	% Penetration	Usage Source
2000	30,000	18,881,600	0.2 %	ITU
2006	401,300	21,801,662	1.8 %	ITU
2008	880,000	23,382,848	3.8 %	ITU
2009	997,000	23,887,812	4.2 %	ITU
2013	8,895,430	25,576.635	34.8%	NCA

Source: Internet World Statistics - www.internetworldstats.com& NCA Ghana

The Table 2 above from the Internet World Statistics depicts that there had been increasing trend in the number of internet users in Ghana in accordance with the rise in population from year 2000 up to year 2013. This positively informs how efficient existing structures put in place are significantly supporting the increasing use of the Internet and ICT in general.

Notwithstanding, the situation back at the various MDAs is not having correlating effect on the increase in the internet penetration. Most of the MDAs do not have access to internet in their offices and those that have are not centrally being used to bring effective collaboration of government information across board. This trend presents a picture of disjointed information access to MDAs and lack of proper coordination and implementation of effective policies.

2.4.3   Network, Intranet and Internet Infrastructure

In maximizing the advantages of ICT, Ghana is seizing the "opportunity to develop and implement a national broadband strategy" as outlined in the ICT4AD Policy. The strategy is to ensure that the country is able to harness broadband

technology by "making it accessible and affordable, to contribute to the Gross Domestic Product (GDP) growth and human development by 2015."[26]

Figure 2: *Submarine Cable Connectivity in Ghana*
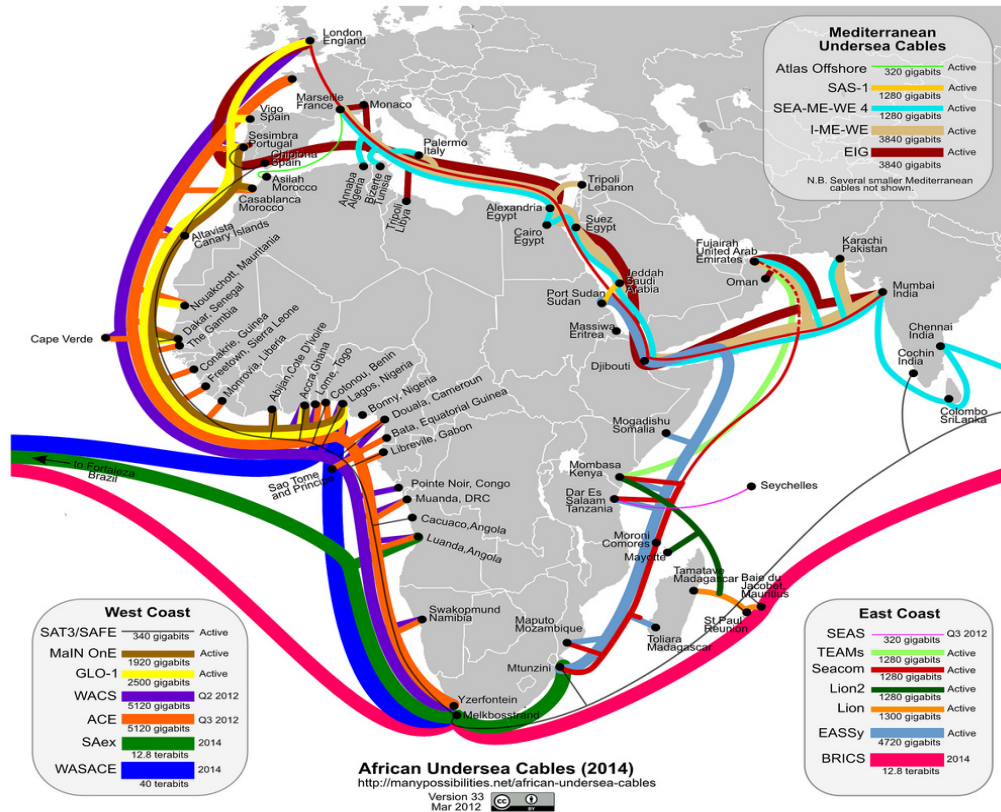
Source: National Communications Authority, 2012.

The Figure 2 above gives a picture of the submarine cable connectivity, placing Ghana's bandwidth capacity availability at approximately 7,160 Gigabytes (or 7.16 Terabytes). The connectivity is expected to help Ghana access faster Internet connectivity. Currently, African Coast to Europe (ACE) has been introduced, providing a capacity of 5,120 Gbits; Sat 3 and Main One have increased their capacity to 340 Gbits and 1,920 Gbits respectfully. In general, the Table 3 below gives an

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[26]Ofosu-Adarkwa, K, National Broadband Policy and Implementation Strategy.A Document on Strategies for Ghana's Broadband Development.(May, 2012) pp. 17.

outlook for the Submarine cable connectivity for the country at 13,140 Gigabites (13.14 Terabites) (NCA, 2013).

Table 3: *Status of Submarine Cable Connectivity in Ghana*

CABLE	OWNER	CAPACITY (/Sec)	STATUS
SAT-3	Vodafone	340Gbits	Operational
MainOne	MainOne Ghana Ltd	1,920Gibytes	Operational
Glo 1	Glo Mobile Ltd	640Gbits	Operational
West African Cable System (WACS)	MTN	5,120Gbits	Operational
African Coast to Europe (ACE)	Expresso	5,120Gbits	Operational
TOTAL		**13,140Gbits**	

Source: National Communications Authority, 2013

The country over the years has been making efforts to bring on board number of private sector operators to join hands with the government and other major Industry players in Ghana to create enough bandwidth capacity that can to a larger extend make enough capacity available for MDAs to improve their operations to foster efficient government service delivery.

There has been the introduction of major in-land fibre projects over the few years. The international submarine cables has landed in Ghana and the Ministry has supported the NCBC to upgrade the existing fibre capacity of the Southern part of Ghana to enable the country benefit from the National Fibre Backbone project, whilst

the Vodafone Ghana Company Limited has also completed the Northern Sector Fibre

ring (National Communication Backbone Company (NCBC), 2011).

Figure 3*: Current National Fibre Backbone Infrastructure*

The Figure 3 above shows the major fibre connectivity installedbut mainly

inland, most of the international connections to give the country easy communication

with neighbouring countries are still classified as planned, and will require huge

future investment.

Also, even though the government has been making strenuous efforts at

developing and increasing the capacity of the fibre to cover all over the country,

majority of the rural and urban centres of the country are not linked to the internet.

This has affected the smooth operations of the MDAs as connectivity from one

government agencyto another does not exist in practice. The statistics indicate that many Ghanaians in the remote and underserved communities are not benefiting from the massive infrastructure and are far behind the digitalization programme The question is, as the world moves into digital and technological advancement, will the government of Ghana be able to undertake the planned digital loop above to create efficient and effective ICT infrastructure and utilization? It is important to note that the World Summit on the Information Society (WSIS) has been instrumental, in promoting the building of a strong achievement of the Information Society by all countries of the world, emphasizing "the need for every individual, community and nation to have access to, to utilize, and to share information and knowledge in order to bolster socio-economic development and improved quality of life. They advocate the crucial need for every country to develop the necessary infrastructure and structures to enable citizens to participate in the information society."[27]

The major concern on the minds of the stakeholders is to have access to the necessary infrastructure and structures available for use. They therefore question the preparedness of various governments and their commitment to ensure easy availability of broadband and access to it. In his study on the commitment of governments, Ndou observed that "many government agencies in developed countries have taken progressive steps toward the web and ICT use, adding coherence to all local activities on the Internet, widening local access and skills," It wasnotedthat such a move opens up an interactive services for local debates, which can further increase

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[27]Frempong, Godfred. 2011. Developing Information Society in Ghana: How Far? Electronic Journal on Information Systems in Developing Countries. 47(8):2.http://www.ejisdc.org.

the participation of citizens on promotion and management of government(Graham and Aurigi, 1997).[28]

This highlights the need for a national broadband that can provide adequate internet access to the citizenry. According to the United Nations Development Planning (UNDP), "an increased broadband penetration will improve Ghana's potential competitiveness in the global market and further have an impact on health, education and standard of living; identified as the three main indicators in the UNDP Human Development Index (HDI)."[29] This will create opportunity for users, including the public servants and the entire general public.

It is noted that the NCBC "was set up to provide broadband capacity for the deployment and application of Information and Communication Technology (ICT) nationwide," which to a very large extent, pave way for the country's socio-economic development. According to the NCBC, the need for adequate broadband was among others, intended to "improve governance, expand educational opportunities, manpower development, healthcare delivery, general commerce, modernized agriculture and also improve environmental monitoring and business development."[30] The diagram below from NCBC depicts the level of support through public private partnership investment to the development of the fibre optic network throughout Ghana to support the e-government network platform.

[28]Valentina Dardha Ndou. 2004. E-Government for Developing Countries: Opportunities and Challenges. The Electronic Journal on Information Systems in Developing Countries 18(1):1.http://unpan1.un.org/intradoc/groups/public/documents/untc/unpan.pdf.
[29]Ghana Connect. A National Broadband Strategy for Economic Growth and Development. Ghana: GC, n.d. pp. 4. http://www.ghanaconnect.org.gh/wpcontent/uploads/2010/09/Ghana_Broadband_Strategy.pdf.
[30]Ibid, pp. 4.

Figure 4*: Country Status of Fibre Network*

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Ho

Though the picture does not give a total coverage throughout the country, but an effective PPP collaboration in providing adequate and reliable broadband capacity for the government, companies and Internet Service Providers will support service delivery with absolute reliability and quality.

In this regard, countries accessibility to adequate broadband and how it could be easily affordable has become a major global issue, therefore bringing ICT to the door step of many countries, and in Ghana especially, the MDAs. It is therefore envisaged that when countries deploy the Universal Access agenda, it could enhance the ICT application in the day-to-day administration of the Country.

Figure 5: *Optical Fibre Ring Logical Layout*
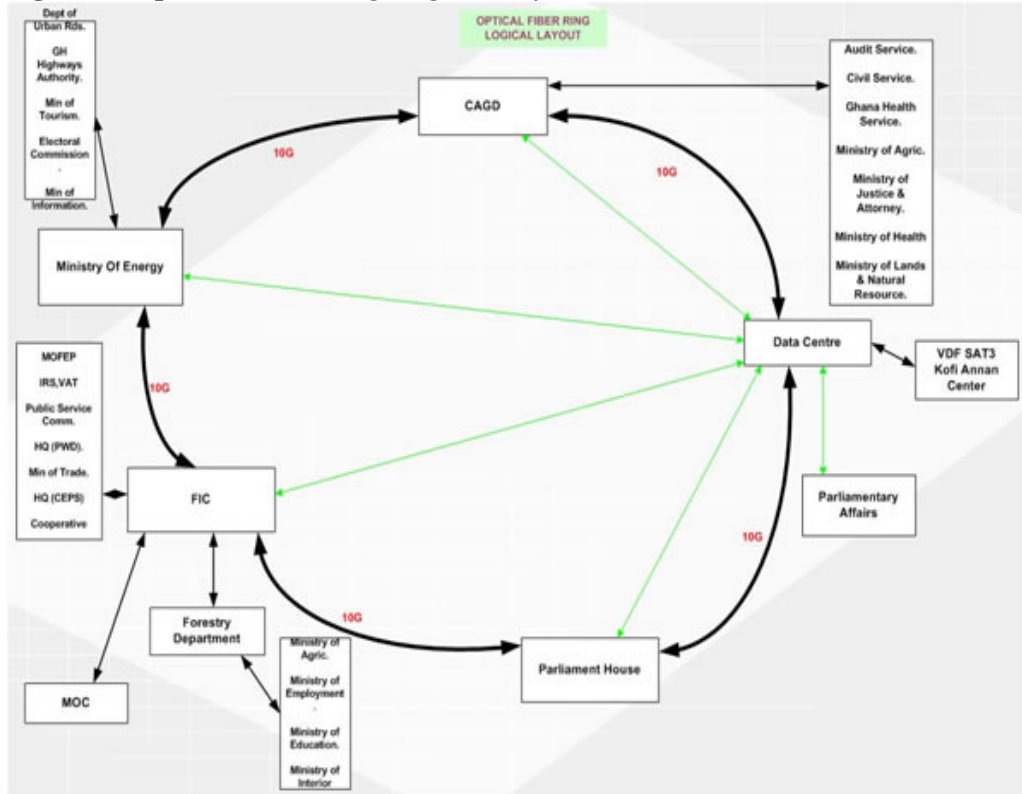
Source: NITA, Ghana 2012

The Figure 5 above is an optical fibre ring logical layout being deployed including a data centre infrastructure. It shows how 10G ring fibre optics connectivity was implemented in the ministries area and a 4G ring to support the other MDAs by fibre-optic connectivity. This is being distributed in the implementation for a fast connectivity to the national data centre to all the MDAs.

The Figure 6 below shows a network infrastructure that allows effective accessibility to the e-government applications by the MDAs.

Figure 6: *Metro FIBRE Ring layout*
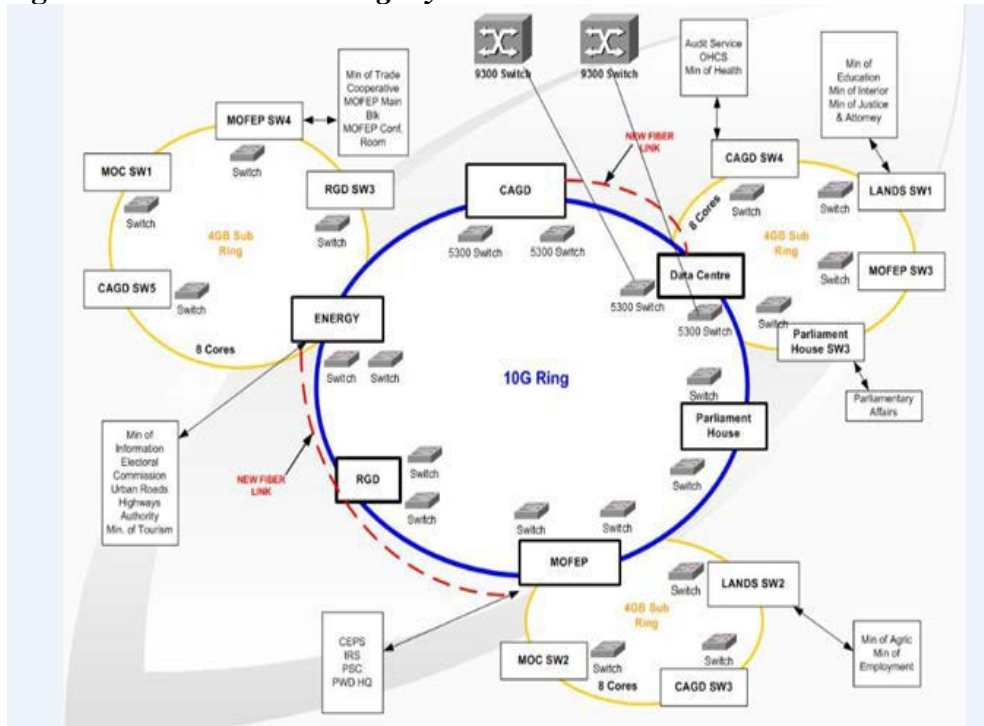
Source: NITA, Ghana 2012

Figure 7: *eGovernment Wimax Network*

Source: NITA, Ghana 2012

The figure 7above shows how the Wimax ICT infrastructure will enhance numerous e-government services delivery to bring citizenry and businesses to collaborate for easy access to information.The Wimax network would aid the deployment last mile solution to nationwidegovernment applications such as e-

services, e-health, e-parliament, e-judicial, among others. It aims to leverage the various e-services for effective e-services.

This connectivity according to (Breen, 2000), in many instances gives the state and local government employees ample opportunity to develop new skills and advance their carriers. Application of e-government in public sector provides opportunity and benefit to improve quality and accessibility of services to the citizens. This explains how availability of In addition to efficiency enhancement, the quality of services may improve via quicker transactions, accountability, faster and better processes in services delivery."[31]

2.4.4   Metro Area Network (MAN) & Local Area Network (LAN)

In furtherance to the connectivity agenda NITA, had deploy the e-government network made up of the LAN and MAN to serve "the Ministries area of Accra, This is to leverage and deliver a state-of-the-art converged high speed metropolitan area network." This system is purposely to connect almost all the MDAs with the aim of promoting the e-government implementation to enhance their operations. Also, the Local Area Network (LAN) is to upgrade and redesign all MDAs, to effectively support governments ICT infrastructure expansion. It is expected that this modern ICT deployments in the entire country will provide "voice and data applications" as well as "content on the government network to improve efficiency and productivity"[32] in the MDAs. The diagram below identifies the nature of the Local Area Network (LAN) infrastructure required to allow the various government offices to connect to

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[31]Ambali, Abdul R. 2010. E-government in Public Sector: Policy Implications and Recommendations for Policy-makers. Research Journal of International Studies.17(11):5.
http://www.eurojournals.com/RJIS_17_10.pdf.
[32]National Information Technology Agency.Agency Responsible for the Implementation of the Ghana's ICT Policies.http://www.nita.gov.gh.

the e-Government network platform to promote effective communication and collaboration.

Figure 8*: Local Area Network (LAN) Infrastructure*

Source, NITA, Ghana 2012

Indisputably, the extent "e-government application" can help various governments change the bureaucratic and slow way of performing their functions; among others, and also reduce operational costs. (Haldenwang, n.d.)."[33] It will be important to ascertain that the e-government platform could ultimately help government facilitate the various electronic applications to bring all the state institutions online to make the entire government organizations well connected to bring effectiveness and efficiency required in their service delivery.

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[33]Christian von Haldenwang. European Association of Development Research and Training Institutes.Electronic Government (E-Government) and Development. Ljubljana: EADI, n.d. pp. 1.
http://www.eadi-online.org/fileadmin/WG_Documents/Reg_WG/haldenwang.pdf.

2.5 UTILIZING ICT TO FACILITATE INTRA-ORGANIZATIONAL AND INTER-ORGANIZATIONAL COMMUNICATION IN PUBLIC INSTITUTIONS

The use of ICT has become central to the organizational communication and to bring all the important actors within the organization to inter-relate effectively with the rest of the organizations outside. Intra-organizational is where there is effective communications within that single organization, whilst the Inter-organization communication is the use of ICT to facilitate communication between two or more separate organizations. This represents the ways the organizations are connected depending on the available ICT systems of communication and the way the organization has set up the existing ICT infrastructure. The breaking down of communications or the requisite connectivity to break down the chain of communications is detrimental to the effective functioning of organizations.

According to Daniela et al, (n.d.) "some individuals assume particular relevance, according to the role they play in enhancing knowledge flows among other actors belonging to the same network."[34] They assert that within every organizational set up each and every individual has a role to play, and the use of ICT could bring such people on board to communicate either within the set up or beyond that organization to explore new technological innovations.

It is acknowledged that informational capacity building and needs of the staff and the intra-organizational role of the Ministry is very key to the development of the telecommunication industry. For this reason, the Ministry has facilitated the need for effective collaboration within the Ministry where internal communication is enhanced.

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[34] Daniela Lubatti, Francesca Masciarelli, Alberto Simboli, DASTA.Inter-Organizational Design:Exploring the Relationship between Formal Architecture and ICT Investments. Italy. pp. 1.
http://link.springer.com

The introduction of e-government network platform project, until its implementation, the human resource capacity of the Ministry was at a disadvantageous state. The effective internal communication was non-existence and staff could not directly access information within their offices.

With the introduction of the e-government network, it has tremendously improved the ICT products within the Ministry. There is regular replacement of new computers and accessories for workers to facilitate internal operations. Furthermore, within the Ministry enclave, only few employees do not have access to computers and internet connectivity.

Access to information from one office to the other are now managed through an intranet infrastructure that came with the e-government project. Though laudable, this service is now on a pilot stage, yet to be implemented across board to enable employees monitor and become involved with what each of the directorates within the respective organizations is doing.

Furthermore, unlike the past, it was difficult for officers within the Ministry to have knowledge and monitor ongoing projects and programmes of the other sectors online. Currently, the establishment of internal ICT network connectivity has improved the communications within the MDAs which has increased the capacity of the staffswithin the MDAs to facilitate quick delivery of services.

Directly relating to the intra-organizational communication is the inter-organizational ICT capacity and the promotion of communications in the MDAs. This is where most of the MDAs can now own effective modern ICT infrastructure through the e-government network and other internal ICT support systems to strengthen the ICT capacity of the various MDAs.

Currently, newly installed ICT equipment by the government through the network infrastructure, such as the Wimax expansion, the local area network, improved fibre-optic network enhancing the MDAs broadband capacity, among other interventions have tremendously increased the availability of ICT products and services that has enhanced the inter-organizational communications in the MDAs.

Figure 9:*e-Government Service Delivery Infrastructure*
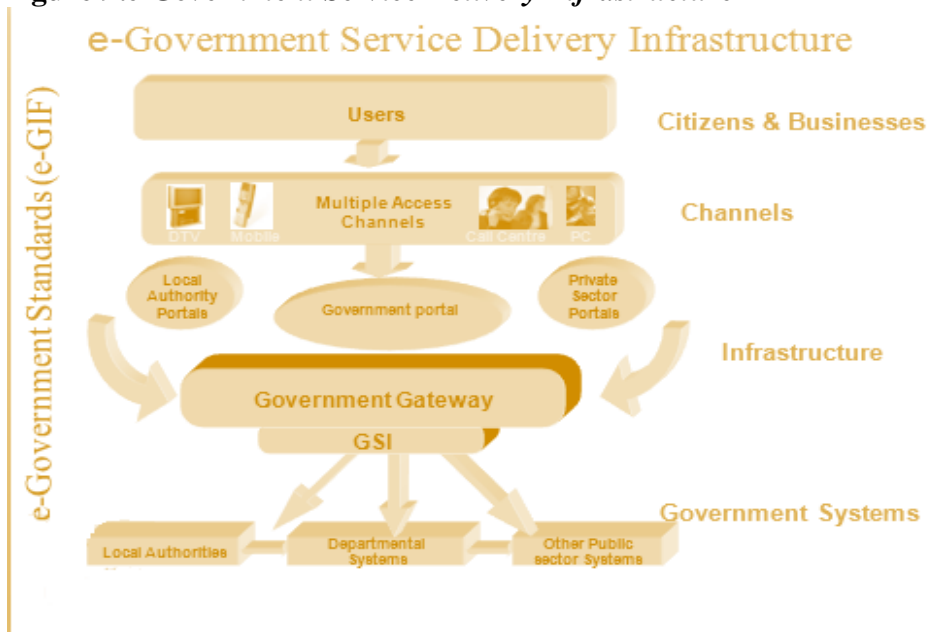
Source: NITA, Ghana 2012

As depicted in Figure 9, MDAs can go online through the government portal to access valuable government information. Officers from the various MDAs can now access information online and access diverse services online as well.

Touching on the projects and programmes, recently there is internal mechanism through the e-government network to bring all MDAs together to properly assess the status of implementation of government projects in line with policy objectives of the government.

Again, through the ICT applications, MDAs can now effectively design and incorporate the roles of the various human resources required for the successful implementation of the various projects and programmes. Relating to the citizens,

MDAs can now effectively provide regular government information through the existence of the e-government network, which has reposed a lot of public trust.

Since the existence of the ICT products and services in most of the MDAs are not being well utilized, the government has instituted measures to train a number of staff to be able to access ICT services. It is when there is efficient and adequate human resource capacity in the various MDAs that the administrative system can function effectively to incorporate the trust and values of the citizens, and their willingness and ability to trust and use the systems.

The delay in government deploying ICT infrastructure to reach the entire country to facilitate easy Internet access to promote intra-organization medium of communication irrespective of which part of the country the MDAs are located.

2.6   COLLABORATING ROLE OF STAKEHOLDERS

In order for the Ministry of Communications to carry out the effective implementation of the outlined ICT policy initiatives to promote the expected vibrant ICT hub for the country there will be the need to "stimulate collaboration and coordination" of the various MDAs to "increase efficiency and effectiveness" in public service delivery. The Ministry of Communications is mandated to deploy the e-government network to enhance effective collaboration amongst the MDAs government information accessible and transmittable.The data centre to be hosted by the Ministry of Communications is expected to host many new applications of MDAs to support their operations. This is expected to bring the various MDAs under one platform for effective collaboration.

It is acknowledged that the operations of the MDAs in Ghana over the years have been hampered with the requisite modern infrastructure capable of improving

the delivery of services in government administrations. Therefore the Data Centre facility is expected to be equipped with "several racks of computing equipment, including high performance servers, fibre channel disk storage and backup storage systems, and sufficient power conditioning with the availability of resources to keep the data centre running continuously ,"[35] will enhance the operations of all MDAs in the country.

In his article, Ndou (2004) proposes a strong partnership between government MDAs and the private sector organizations among others such as "major donors, research institutions and universities," to support "cross fertilization of ideas, solutions and knowledge to address challenges and opportunities in ICT."[36]

This is appropriate for the positive improvement of the sector. In dealing with efficient and effective collaboration that will achieve positive results, the writer further acknowledged that, the implementing agencies requires holistic adoption of a comprehensive approach that goes with "clear vision and strategy" to address "barriers and challenges for change." By combining ideas he noted that this will "demand strong integration of ICT (e-Government) with other national developmental strategies and policies to ensure a broad base diffusion."[37]

In his further remarks, Ndou advised that the active role of the requisite stakeholders in any policy process will go a long way to make "ICT development a national priority, and build and maintain wide commitment and involvement at all levels of development, including public and private levels." [38] It is therefore

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[35]National Communications Authority.Ghana's National Telecommunication Regulating Agency.n.d.www.nca.org.gh.
[36]Valentina Dardha Ndou. 2004. E-Government for Developing Countries: Opportunities and Challenges. The Electronic Journal on Information Systems in Developing Countries 18(1):17. http://unpan1.un.org/intradoc/groups/public/documents/untc/unpan.pdf.
[37]Ibid, 17.
[38]Ibid, P. 17.

imperative that the Ministry strengthens their monitoring and evaluation functions and also collaborate with the MDAs for the e-Government network and associated applications to serve the needs of the various agencies to enhance their service delivery.

2.7   PROVISION OF FUNDING MECHANISM

According to Pigato (2001) in her essay, "Information and Communication Technology, Poverty, and Development in sub-Saharan Africa and South Asia," indicated that "Global knowledge is becoming increasingly important in promoting economic growth through higher competitiveness, and enhancing human development and reducing poverty."[39]

Even though she identifies the positive initiatives of ICT and success in terms of implementation that could bring measurable benefits, the issue of financial sustainability associated with the problem of ascertaining the value placed on it by the ordinary citizen; when in effect, these services provided are often expected to be free, yet, often expensive to access.

In agreeing with her, the problem of government funding and the constraints the Ministry faces in meeting the development of potential infrastructure such as ICT equipment, broadband among others to enable the MDAs have accessible infrastructure to support their internal ICT application for the running of the day-to-day administration of policies and programmes in line with the strategic focus of the government's ICT initiatives, leaves much to be desired. One cannot run away from the fact that the potential benefits, in terms of bringing government information to

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[39]Pigato, M.A, Information and Communication Technology, Poverty, and Development in sub-Saharan Africa and South Asia. Africa Regional Working Paper Series No. 20, World Bank document. (August, 2001) pp. 2. www.worldbank.org/afr/wps/wp61.pdf.

create enormous opportunities to the government employees and the general public are obvious.

However, these eminent potential drawbacks in terms of accessible funding and subsequent project and programs sustainability will affect the effective demand for ICT-based information and services and to a large extent hamper the technological advancement of the nation.

2.8   HUMAN RESOURCE CAPACITY

According to Tózsa and Budai (n.d.), in "Electronic-Government of Local Administration in Hungary," they identified the need for the state to observe the "demands of its citizens and try to reform public administration in order to answer their expectations." In their claim, "the services of public administration ought to be effective, available to all, provide downloadable information, and be transparent for the public to control."[40]

They mentioned that the "technical platform to perform the public services has been provided by the rapid development of the modern communication and information technologies." Therefore, they "identified education in e-government as quite essential and a necessity to build the capacity of the concerned public and civil servants." Thus, importantly, they claimed that ICT and modern technologies requires technical skills to be able to have knowledge in the technicalities of the area."[41] This points out how necessary various governments require the use of ICT as a platform to raise the skills and knowledge of the public and civil servants, with the aim of creating a proper and effective knowledge and information human resource capable of using the necessary ICT tools for service delivery.

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[40]Istvan, Tózsa and Balazs, Budai. Electronic-Government of Local Administration in Hungary.pp.6, https://docs.google.com/viewer:unpan1.un.org/intradoc/groups/public/documents/untc/unpan.
[41]Ibid.,8.

Referring to the need to address the financial mechanism for accessibility and availability of computers, equipment and communicative technologies, their claim is quite eminent in identifying the training needs and capacity of employees to be able to handle the ICT tools to address the policies and programmes to meet the daily demand of the populace. As they put it, "their knowledge, receptivity, expectations and demands are indispensable for any e-government to function."[42]

Building the capacity of staff with technical skills and knowledge, to have insight into ICT policies is very crucial for decision-making process as it could have great impact on policy implementation. Therefore agreeing with the opinion stated above, "a desirable level of IT literacy is crucial," especially in areas such as "networking, systems administration, database administration, security, fundamental computing and web-based systems."[43]

In this regard, the facilitation of smooth implementation of government programmes could be assured, thus the MDAs can have competent and skilled personnel who can represent and present strategic government policies working through effective collaboration.

Government staffs that undergo professional ICT training should at every level of decision-making be involved, and MDAs must make efforts to structure policies to incorporate ICT professionals in the organizational structure.

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[42]Ibid.,2.

[43]Kusi, Acheampong Emmanuel. 2012. The State of Information and Communication Technology and Health Informatics in Ghana. Online Journal of Public Health Informatics 4(2): 6-7.
http://ojphi.org

CHAPTER THREE

3.0   METHODOLOGY

3.1   INTRODUCTION

In order to enable the researcher undertake a successful research, this chapter will address the methodology that will be employed in the collection of data and the requisite information to meet the set goals for the research. This will critically review the research design, the study area, the sampling and the procedure, sources and types of data, data collection and processing methods or techniques.

3.2   THE STUDY AREA

The study area for the research included the Ministry of Communications and some of its selected agencies which form part of the government MDAs which serve as implementing bodies for the ICT infrastructure and services that are being applied in government MDAs across the entire country.

The study would take place at the Ministerial Enclave which is located in the Accra Metropolitan Area within the Greater Accra Region. It is the hub of government activities accommodating all the Government Ministries except Ministries of Foreign Affairs and Information. It also has a sizeable number of Departments and Agencies including the Ministry of Communications and other quasi governmental bodies as well as other private organisations. An estimated number of over 10,000 people working in this location both formal and informal for government and the private sector. The rationale for the selection of this site is that it will provide the researcher a clear picture of how the MDAs using the ICT tools within the enclave

to inter-relate to one another to ascertain the impact of the e-government projects benefiting them.

It is noted that the research is centred on government policies on ICT application in these areas, and therefore the respondents to the survey questions would be public and civil servants who apply these tools in the delivery of their operations. It would be expected that the respondents with IT background will be prepared to expressively comment on various questions that will be posed by the researcher in order to help the researcher make an informative analysis and draw useful conclusions.

3.3   THE RESEARCH DESIGN

The researcher undertooka questionnaire administration method where the researcher before beginning the process, designs the research question in relation to the underlying issues that need to be researched into. According to S. M. Aqil Burney(2008),a survey utilizes the deductive approach, where "reasoning works from a more general to a more specific position,"[44] such that conclusions could follow logically from premises or available facts. The researcher adopted an approach of designing questionnaire that allows the researcher to "use closed questions and respondents can choose from pre-defined options. The survey allows the researcher to administer questionnaires to a large number of people where large data could be collected analyzed and interpreted. This makes it easier for the researcher to get an informed response from respondents because most aspects of the survey and the structured interview process are fairly certain."[45]

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[44]Prof. Dr. Burney, S. M. Aqil. University of Computer Science.Inductive & Deductive Research Approach. University of Karachi: 2008. 4-5.
http://www.scribd.com/doc/13920229/Inductive-Deductive-Research-Approach.
[45]Lund Research Ltd.2012.Dissertations & Theses an online textbook"

The survey strategy enables the researcher to employ a qualitative research design that was aimed at analyzing the qualitative data for the research. This is subjective in approach, and makes one understands how human beings behave.

3.4   POPULATION AND THE SAMPLING PROCEDURE

In order to ensure effective data gathering to facilitate the study, the researcher employed a representation of the population sample size for the study. Here, the sample unit size included the people working in the selected MDAs and the industry players aimed at ensuring the authenticity of the primary data. The researcher further picked the seventy-five (75) respondents as sample size to ensure that there could be reasonable deductions and conclusions about the size. The researcher undertook a survey of staff of the selected MDAs and industry players from the population and obtained about seventy-five (75) respondents.

The researcher adopted the randomization or probability sampling approach. This involves questionnaires designed as a guide to interview and also sample the population. The questionnaires and interviews were administered to various respondents using "simple random sampling technique wherein the samples are gathered in a process and individuals in the population are given equal chances of randomly being selected"[46] to respond to the questionnaire.

3.5   DATA COLLECTION PROCEDURE AND PROCESSING METHODS

The researcher used different procedures to gather the required data for the research in order to have workable information for a successful research. He therefore

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http://dissertation.laerd.com/research-strategy-and-research-ethics.php#first.
[46]Ashley Crossman. sociology.about.com. Types of Sampling Designs.
http://sociology.about.com/od/Research/a/sampling-designs.htm.

employed the primary and secondary methods of data collection methods respectively. With the primary source, data was obtained through the use of questionnaires that were administered to the people as well as personal interviews and other personal observations on the subject matter.

The secondary data collection on the other hand dealt with the collection of information that was sourced from already compiled documents from MDAs and other stakeholders as well as information obtained from books from libraries, Institutions, government publications, articles and online sources.

3.5.1 Data Collection Instrument

The researcher distributed questionnaires to the respondents personally and via email as well as interviews conducted through telephones and face-to-face interviews. The researcher employed two types of approaches in the design of the questionnaires these included the closed and open-ended approaches.

It is noted that the use of the closed approach enabled the various correspondents to answer to the appropriate questions from a number of list of answers provided by the researcher regarding the area of study. The open-ended approach on the other hand gave the respondents the opportunity to be able to articulate their views and concerns related to the topics raised in the questionnaires.

The administration of questionnaires was undertaken through the random sampling approach which further allowed respondents to have equal opportunity of being selected, and this further ensured fairness. Also, the system allowed respondents to have the freedom to answer questions in a relatively relaxed and comfortable atmosphere.

The data collection also employed the face-to-face interviews. This was conducted by the researcher with the assistance of key staff of the Ministry and other stakeholders. This process was done in a normal setting which allowed data to be collected through direct means of communication between the researcher and the various MDAs selected as well as other stakeholders identified.

3.5.2 Data Analysis Procedure

The researcher employed the both primary and secondary data collection. Collected data were gathered and edited electronically in order to save time, and information found to be inaccurate or not meeting the required standard was discarded whilst data that were good and met the expectation of the researcher were properly processed and analyzed. The information that was gathered through the application of survey instrument were analyzed to enable the researcher test the hypothesis that was being researched on, thereby putting information in the right perspective to enable researcher arrive at a reasonable and appreciable conclusions.

The researcher employed the Statistical Packages for Social Sciences (SPSS) software to undertake the data collection to be able to do proper analysis. It is noted that this software helps researchers by generating charts and tables to help undertake better analysis. More importantly, information that are often generated through this software assist the researcher to easily share the findings by communicating results easily to the large readers, such as decision makers and other stakeholders, and providing easy and understandable information to the entire readers.

CHAPTER FOUR

4.0   FINDINGS AND ANALYSIS

4.1   INTRODUCTION

This chapter analyses the results and discussions of the study. In all, the researcher sampled about seventy-five (75) respondents from some of the key MDAs in the sampled areas for the research study.

Table 4 Social demographics of Respondents from MDA

Description	Variable	No. of Staff	Percentage (%)
Gender	Male	37	49.33
	Female	36	48.00
	No response	2	2.67
	Total	75	100.00
Level of education	Junior High	2	2.67
	Senior High	1	1.33
	HND	23	30.67
	Bachelors Degree	32	42.67
	Masters Degree	17	22.67
	Total	75	100.00
Experience	0-5years	29	38.67
	6-10 years	31	41.33
	11-15years	11	14.67
	16-20years	4	5.33
	Total	**75**	**100.00**
Profession/occupation Category	Management	5	6.67
	Senior	34	45.33
	Junior	30	40.00
	Others	5	6.67
	No response	1	1.33
	Total	75	100.00

Source: Field work April 2013

Gender

The Table 4 above shows a frequency distribution of gender of the respondents as 49.3% males and 48.0% being females.

Occupational Distribution

The above frequency under this section shows that 40% of respondents are in the junior level, 45.3% are in the senior level, and 6.75% are in the management level whiles 6.7% are for other levels in the various MDAs. This shows that majority of respondents are in the senior level of the various MDAs

Work Experience

The frequency in Table 4 also shows that, with work experience of the various respondents, 38.7% have worked between 0-5 years, 41.3% have worked 6-10 years, 14.7% have worked 11-15 years and 5.3% have worked between 16-20 years in the organizations.

Educational level

The last frequency in Table 4 above shows the educational level of the respondents. 30.7% have had their HND, 42.7 have had their bachelor's degree and 22.7% have had their Master's degree. This show that majority of people in the MDAs have attained higher educational qualifications.

4.2   RESULTS OF THE STUDY

This section details responses obtained from respondents of the study.

4.2.1   Policy and programmes targeting ICTs deployment and exploitation in public institutions

Table 5: MDAs that have produced ICT Policies

Type of Organisation	Total No of Organ	With policies%	Total No of Organ	Without Policies%	Category/Cluster Percentage of the Organisation
Ministries	20	9.09	6	3.73	76.92
Departments	49	22.27	51	31.68	49.00
Agencies	146	66.36	104	64.60	58.40
Central Mgt Agencies	5	2.27	0	-	100.00
Total	220	100.00	161	100.00	

Source: Field work April 2013

Figure 10:.*MDAs that have produced ICT Policies*
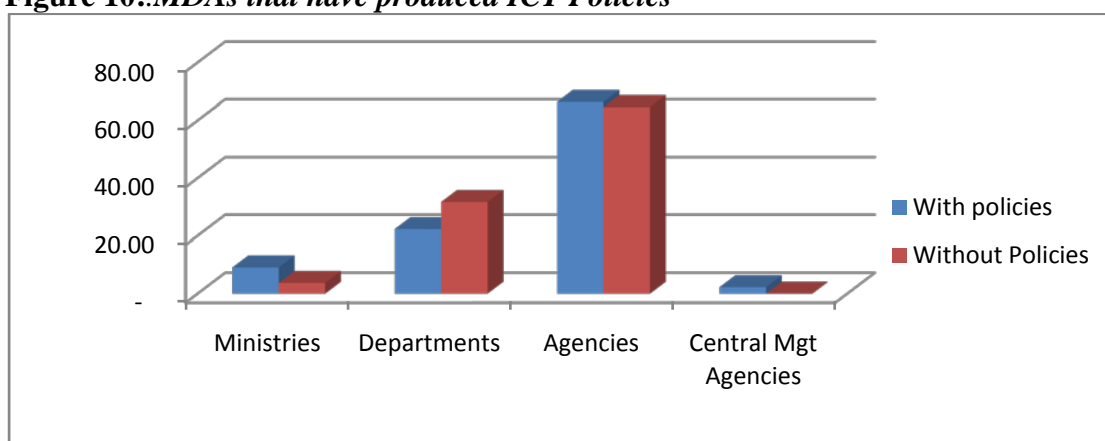
Source: Field work April 2013

Table 6: *MDA with Programmes as distinguished between internal and external beneficiaries*

	Ministries	Departments	Agencies	Central Mgt agencies
Internal Administrative Process	17.31	16.95	31.58	35.71
Improve Services to Public	82.69	83.05	68.42	64.29
Total	100.00	100.00	100.00	100.00

Figure 11.*MDA with Programmes as distinguished between internal and external beneficiaries*
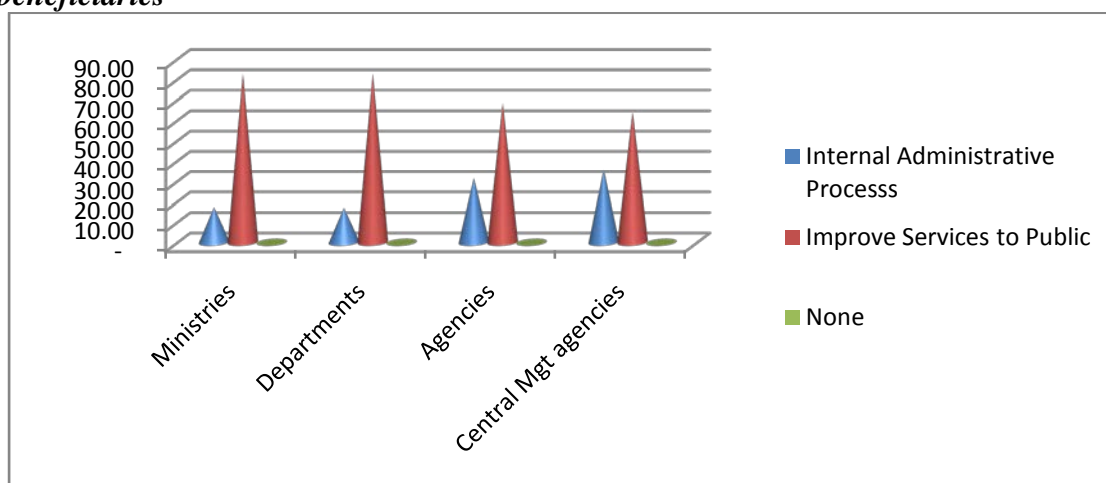
Source: Field work April 2013

FREQUENCIES AND CROSS TABULATIONS

4.2.2   Assessing the impact of using ICT to enhance the evaluation capacity of MDAs

Table 7*: The extent ICT can enhance the planning capacity of the MDAs in the execution of policies*

N	Valid	73
	Missing	2

To what extent can ICT enhance the planning capacity of the MDAs in the execution of policies

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very high	49	65.3	67.1	67.1
	High	20	26.7	27.4	94.5
	Moderate	4	5.3	5.5	100.0
	Total	73	97.3	100.0	
Missing	No Responses	2	2.7		
Total		75	100.0		

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Table 8:*Statistics indicating the views of the respondents, whether the introduction of ICT in the execution of policies will improve the implementation and evaluation capacity of the MDA*

N	Valid	71
	Missing	4

In your view, will the introduction of ICT in the execution of policies will improve the implementation and evaluation capacity of the MDAs

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	67	89.3	94.4	94.4
	No	4	5.3	5.6	100.0
	Total	71	94.7	100.0	
Missing	No Responses	4	5.3		
Total		75	100.0		

Table 9: *Statistics showing whether the increase use of ICTs in the delivery of public services has improved the operations of public services*

N	Valid	64
	Missing	11

In your opinion, do you think the increase use of ICTs in the delivery of public services has improved the operations of public services

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Time spent to access services shortened	10	13.3	15.6	15.6
	Some information can be accessed via internet which saves cost	32	42.7	50.0	65.6
	Responses to inquiries are efficiently delivered on time	22	29.3	34.4	100.0
	Total	64	85.3	100.0	
Missing	No Responses	11	14.7		
Total		75	100.0		

4.2.3 Using Public Private Partnership in Deploying ICTs for MDAs

Table 10: *Statistics indicating whether the private sector be encouraged to partner government in the provision of ICT infrastructure and service*

N	Valid	74
	Missing	1

Should the private sector be encouraged to partner government in the provision of ICT infrastructure and service for the public administration

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	73	97.3	98.6	98.6
	No	1	1.3	1.4	100.0
	Total	74	98.7	100.0	
Missing	No Responses	1	1.3		
Total		75	100.0		

Table 11: *Comparison of Respondents with Computer Access and increasing use of ICTs against improved delivery of public services*

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Do you have access to computer in your office * In your opinion, do you think the increase use of ICTs in the delivery of public services has improved the operations of public services	63	84.0%	12	16.0%	75	100.0%

Do you have access to computer in your office * In your opinion, do you think the increase use of ICTs in the delivery of public services has improved the operations of public services

			In your opinion, do you think the increase use of ICTs in the delivery of public services has improved the operations of public services			Total
			Time spent to access services shortened	Some information can be accessed via internet which saves cost	Responses to inquiries are efficiently delivered on time	
Do you have access to computer in your office	Yes	Count	8	28	20	56
		% within Do you have access to computer in your office	14.3%	50.0%	35.7%	100.0%
		% within In your opinion, do you think the increase use of ICTs in the delivery of public services has improved the operations of public services	80.0%	90.3%	90.9%	88.9%
	No	Count	2	3	2	7
		% within Do you have access to computer in your office	28.6%	42.9%	28.6%	100.0%
		% within In your opinion, do you think the increase use of ICTs in the delivery of public services has improved the operations of public services	20.0%	9.7%	9.1%	11.1%
Total		Count	10	31	22	63
		% within Do you have access to computer in your office	15.9%	49.2%	34.9%	100.0%

	% within In your opinion, do you think the increase use of ICTs in the delivery of public services has improved the operations of public services	100.0%	100.0%	100.0%	100.0%

Figure 12: *Bar Chart of Comparison of Respondents with Computer Access and increasing use of ICTs against improved delivery of public services*

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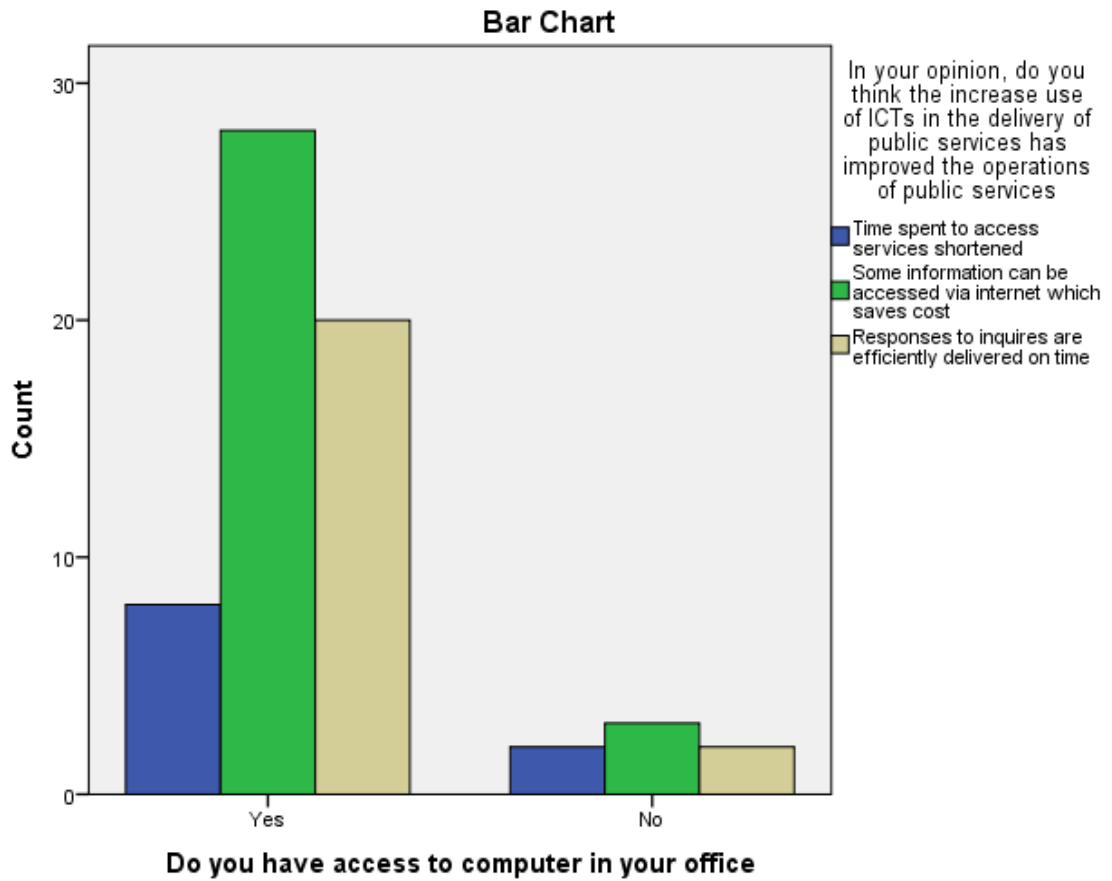
Table 12: *Comparison of Respondents increase usage of kinds of ICT services against its improvement in the operations of MDAs*

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Please indicate the kind of services you use the computer for * In your opinion, do you think the increase use of ICTs in the delivery of public services has improved the operations of public services	58	77.3%	17	22.7%	75	100.0%

Please indicate the kind of services you use the computer for * In your opinion, do you think the increase use of ICTs in the delivery of public services has improved the operations of public services Cross tabulation

			In your opinion, do you think the increase use of ICTs in the delivery of public services has improved the operations of public services			Total
			Time spent to access services shortened	Some information can be accessed via internet which saves cost	Responses to inquiries are efficiently delivered on time	
Please indicate the kind of services you use the computer for	Office Applications	Count	4	14	10	28
		% within Please indicate the kind of services you use the computer for	14.3%	50.0%	35.7%	100.0%
		% within In your opinion, do you think the increase use of ICTs in the delivery of public services has improved the operations of public services	50.0%	50.0%	45.5%	48.3%

	Internet Browsing	Count	4	13	11	28
		% within Please indicate the kind of services you use the computer for	14.3%	46.4%	39.3%	100.0%
		% within In your opinion, do you think the increase use of ICTs in the delivery of public services has improved the operations of public services	50.0%	46.4%	50.0%	48.3%
	Others	Count	0	1	1	2
		% within Please indicate the kind of services you use the computer for	0.0%	50.0%	50.0%	100.0%
		% within In your opinion, do you think the increase use of ICTs in the delivery of public services has improved the operations of public services	0.0%	3.6%	4.5%	3.4%
Total		Count	8	28	22	58
		% within Please indicate the kind of services you use the computer for	13.8%	48.3%	37.9%	100.0%
		% within In your opinion, do you think the increase use of ICTs in the delivery of public services has improved the operations of public services	100.0%	100.0%	100.0%	100.0%

Figure 13: *Comparison of Respondents increase usage of kinds of ICT services against its improvement in the operations of MDAs*
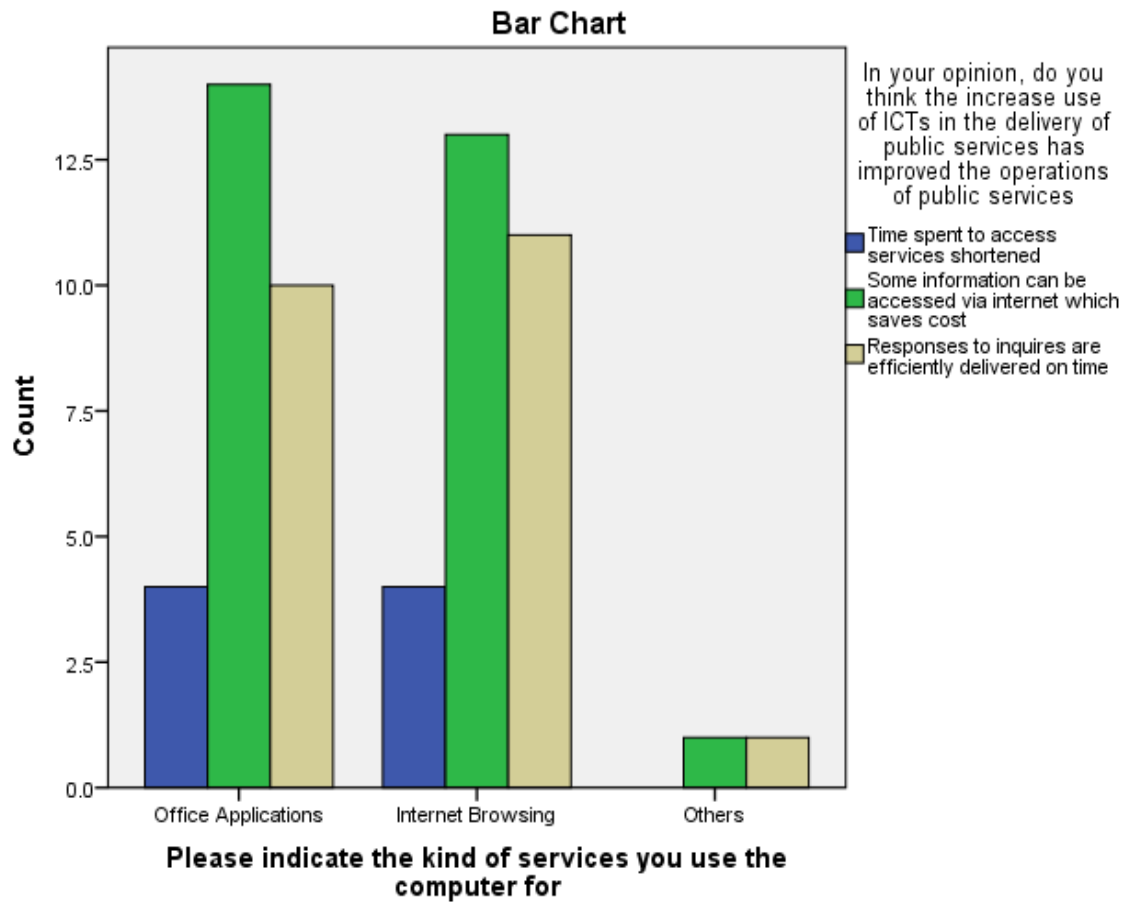
Table 13*: Comparison of Respondents Access to Internet/ICT against its impact on executing policies to improve capacity of the MDAs*

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Do you access to Internet in your office * In your view, will the introduction of ICT in the execution of policies improve the implementation and evaluation capacity of the MDAs	71	94.7%	4	5.3%	75	100.0%

Do you access to Internet in your office * In your view, will the introduction of ICT in the execution of policies improve the implementation and evaluation capacity of the MDAs

Cross tabulation

			In your view, will the introduction of ICT in the execution of policies improve the implementation and evaluation capacity of the MDAs		Total
			Yes	No	
Do you access to Internet in your office	Yes	Count	63	4	67
		% within Do you access to Internet in your office	94.0%	6.0%	100.0%
		% within In your view, will the introduction of ICT in the execution of policies improve the implementation and evaluation capacity of the MDAs	94.0%	100.0%	94.4%
	No	Count	4	0	4
		% within Do you access to Internet in your office	100.0%	0.0%	100.0%

		Yes	No	Total
	% within In your view, will the introduction of ICT in the execution of policies improve the implementation and evaluation capacity of the MDAs	6.0%	0.0%	5.6%
Total	Count	67	4	71
	% within Do you access to Internet in your office	94.4%	5.6%	100.0%
	% within In your view, will the introduction of ICT in the execution of policies improve the implementation and evaluation capacity of the MDAs	100.0%	100.0%	100.0%

Figure 14*: Comparison of Respondents Access to Internet/ICT against its impact on executing policies to improve capacity of the MDAs*
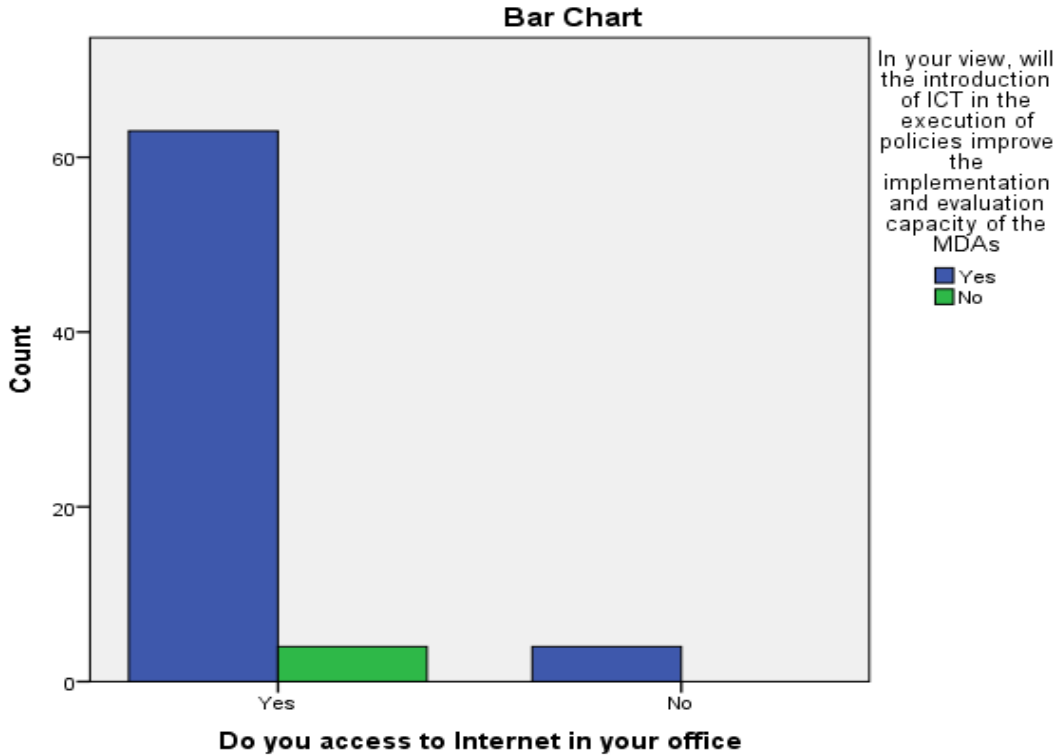
Table 14: *Comparison of Respondents Accessing ICT services for capacity building against the impact on e-government infrastructure to enhance service delivery.*

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
In your view, will the introduction of ICT in the execution of policies improve the implementation and evaluation capacity of the MDAs * Do you think e-government network infrastructure connectivity to public sector offices in the country can enhance efficient delivery of public services to the citizenry	66	88.0%	9	12.0%	75	100.0%

In your view, will the introduction of ICT in the execution of policies improve the implementation and evaluation capacity of the MDAs.Do you think e-government network infrastructure connectivity to public sector offices in the country can enhance efficient delivery of public services to the citizenry

Cross tabulation

			Do you think e-government network infrastructure connectivity to public sector offices in the country can enhance efficient delivery of public services to the citizenry			Total
			Yes	Maybe	No	
In your view, will the introduction of ICT in the execution of policies improve the implementation and evaluation capacity of the MDAs	Yes	Count	47	13	2	62
		% within In your view, will the introduction of ICT in the execution of policies improve the implementation and evaluation capacity of the MDAs	75.8%	21.0%	3.2%	100.0%

		% within Do you think e-government network infrastructure connectivity to public sector offices in the country can enhance efficient delivery of public services to the citizenry	97.9%	86.7%	66.7%	93.9%
	No	Count	1	2	1	4
		% within In your view, will the introduction of ICT in the execution of policies improve the implementation and evaluation capacity of the MDAs	25.0%	50.0%	25.0%	100.0%
		% within Do you think e-government network infrastructure connectivity to public sector offices in the country can enhance efficient delivery of public services to the citizenry	2.1%	13.3%	33.3%	6.1%
Total		Count	48	15	3	66
		% within In your view, will the introduction of ICT in the execution of policies improve the implementation and evaluation capacity of the MDAs	72.7%	22.7%	4.5%	100.0%

|					
	% within Do you think e-government network infrastructure connectivity to public sector offices in the country can enhance efficient delivery of public services to the citizenry	100.0%	100.0%	100.0%	100.0%

Figure 15*: Comparison of Respondents Accessing ICT services for capacity building against the impact on e-government infrastructure to enhance service delivery*
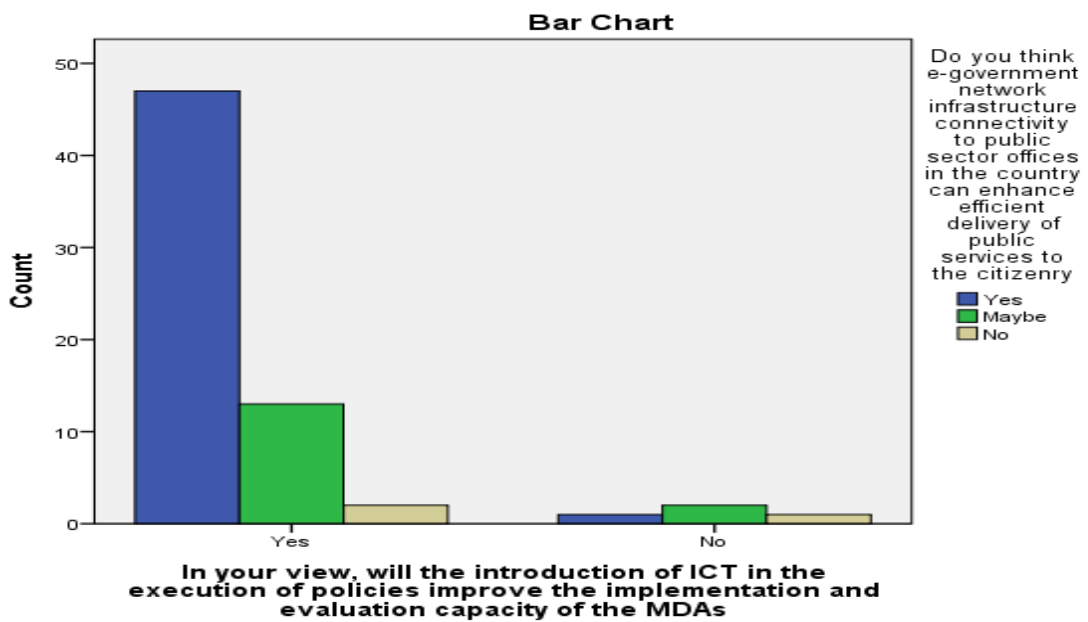
4.2.4 Using ICT4AD Policy to enhance service delivery in the Public Administrative System

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Table 15: *Comparison of Respondents who are aware of the ICT4AD policy against those who will support the Implementation of programmes and Initiatives outlined in the policy.*

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Are you aware of the ICT4AD policy facilitating ICT usage amongst MDAs * Would you support the implementation of ICT programmes and initiatives identified by the ICT4AD for the socio-economic development	69	92.0%	6	8.0%	75	100.0%

Are you aware of the ICT4AD policy facilitating ICT usage amongst MDAs * Would you support the implementation of ICT programmes and initiatives identified by the ICT4AD for the socio-economic development
Cross tabulation

			Would you support the implementation of ICT programmes and initiatives identified by the ICT4AD for the socio-economic development		Total
			Yes	No	
Are you aware of the ICT4AD policy facilitating ICT usage amongst MDAs	Yes	Count	34	8	42
		% within Are you aware of the ICT4AD policy facilitating ICT usage amongst MDAs	81.0%	19.0%	100.0%
		% within Would you support the implementation of ICT programmes and initiatives identified by the ICT4AD for the socio-economic development	63.0%	53.3%	60.9%
	No	Count	20	7	27

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			74.1%	25.9%	100.0%
		% within Are you aware of the ICT4AD policy facilitating ICT usage amongst MDAs	74.1%	25.9%	100.0%
		% within Would you support the implementation of ICT programmes and initiatives identified by the ICT4AD for the socio-economic development	37.0%	46.7%	39.1%
Total		Count	54	15	69
		% within Are you aware of the ICT4AD policy facilitating ICT usage amongst MDAs	78.3%	21.7%	100.0%
		% within Would you support the implementation of ICT programmes and initiatives identified by the ICT4AD for the socio-economic development	100.0%	100.0%	100.0%

Figure 16: *Comparison of Respondents who are aware of the ICT4AD policy against those who will support the Implementation of programmes and Initiatives outlined in the policy.*
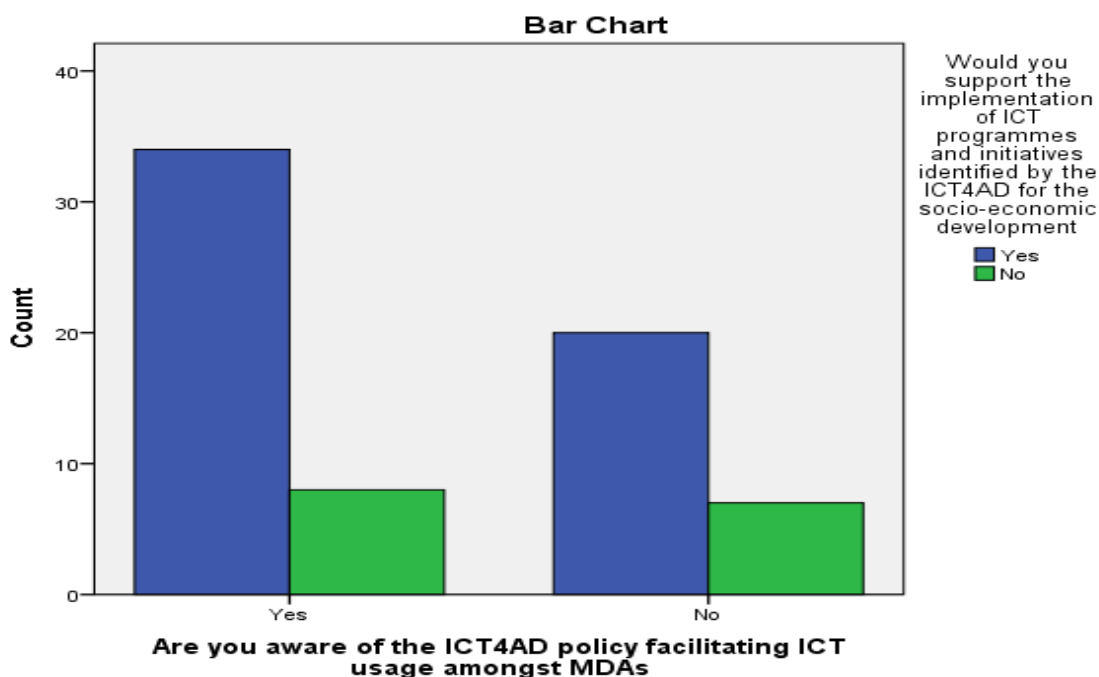
4.2.5 Evaluating the Effects of the Introduction of e-Government

Table:16*Comparison of Respondents who are aware of the e-government network infrastructure project against those who think the network infrastructure to public sector offices can enhance efficient delivery of employees.***Case Processing Summary**

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Have you heard about the e-government network infrastructure project by the government * Do you think the e-government network infrastructure connectivity to public sector offices in the country can enhance efficient delivery of public services to the citizenry	69	92.0%	6	8.0%	75	100.0%

Have you heard about the e-government network infrastructure project by the government * Do you think the e-government network infrastructure connectivity to public sector offices in the country can enhance efficient delivery of public services to the citizenry: Cross tabulation

			Do you think e-government network infrastructure connectivity to public sector offices in the country can enhance efficient delivery of public services to the citizenry			Total
			Yes	Maybe	No	
Have you heard about the e-government network infrastructure project by the government	Yes	Count	43	9	0	52
		% within Have you heard about the e-government network infrastructure project by the government	82.7%	17.3%	0.0%	100.0%
		% within Do you think e-government network infrastructure connectivity to public sector offices in the country can enhance efficient delivery of public services to the citizenry	87.8%	56.2%	0.0%	75.4%
	No	Count	5	5	0	10
		% within Have you heard about the e-government network infrastructure project by the government	50.0%	50.0%	0.0%	100.0%
		% within Do you think e-government network infrastructure connectivity to public sector offices in the country can enhance efficient delivery of public services to the citizenry	10.2%	31.2%	0.0%	14.5%
	Some	Count	1	2	4	7

	How	% within Have you heard about the e-government network infrastructure project by the government	14.3%	28.6%	57.1%	100.0%
		% within Do you think e-government network infrastructure connectivity to public sector offices in the country can enhance efficient delivery of public services to the citizenry	2.0%	12.5%	100.0%	10.1%
Total		Count	49	16	4	69
		% within Have you heard about the e-government network infrastructure project by the government	71.0%	23.2%	5.8%	100.0%
		% within Do you think e-government network infrastructure connectivity to public sector offices in the country can enhance efficient delivery of public services to the citizenry	100.0%	100.0%	100.0%	100.0%

Figure:17*Comparison of Respondents who are aware of the e-government network infrastructure project against those who think the network infrastructure to public sector offices can enhance efficient delivery of employees*
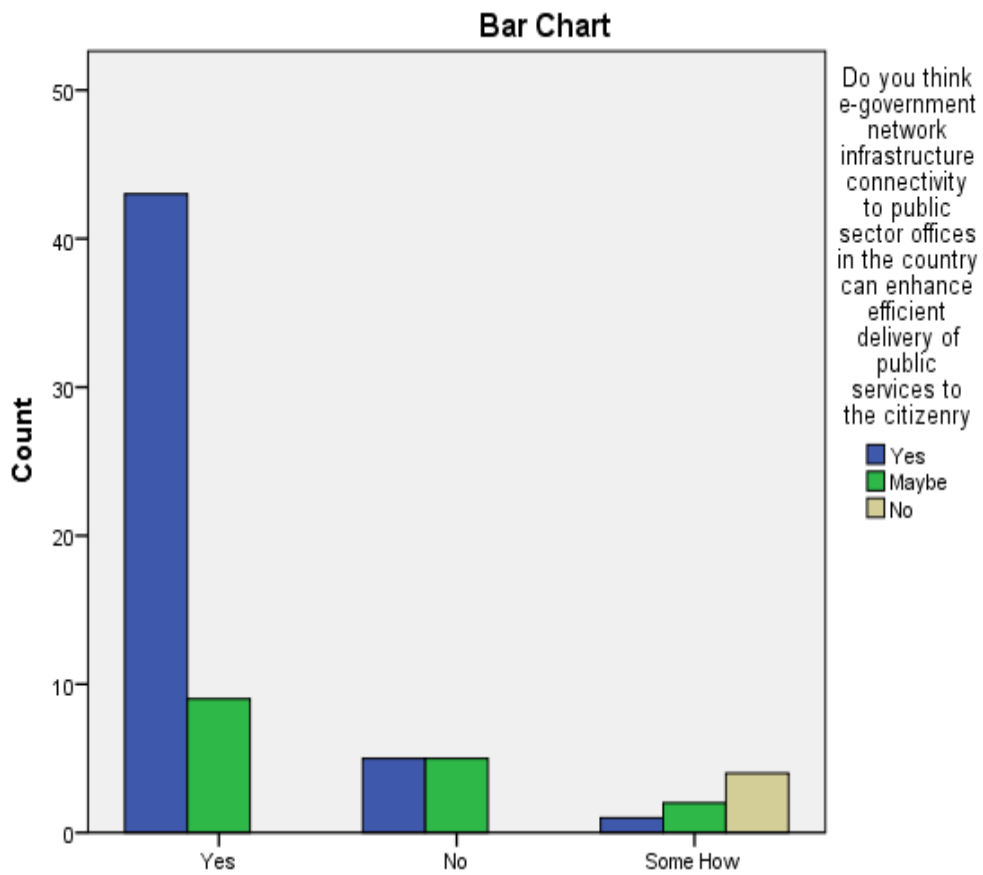

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Have you heard about the e-government network infrastructure project by the government?

4.2.6 Assessing the effect of improved ICT skills on the service delivery of the public administration system.

Table:17 *Comparison of Respondents who think the government has adequate skilled human resource capacity to Implement ICTs in MDAs against those who believe government has attractive incentives to attract and maintain human resource experts for MDAs.*

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
In your opinion, do you think that the government has adequate skilled human resource capacity to facilitate the implementation of ICT in the entire public administration system in Ghana * Does government have attractive incentives to attract and maintain human resource experts to manage the ICT infrastructure and services in the MDAs	71	94.7%	4	5.3%	75	100.0%

In your opinion, do you think that the government has adequate skilled human resource capacity to facilitate the implementation of ICT in the entire public administration system in Ghana * Does government have attractive incentives to attract and maintain human resource experts to manage the ICT infrastructure and services in the MDAs Cross tabulation

			Does government have attractive incentives to attract and maintain human resource experts to manage the ICT infrastructure and services in the MDAs		Total
			Yes	No	
In your opinion, do you think that the government has adequate skilled human resource capacity to facilitate the implementation of ICT in the entire public administration system in Ghana	Yes	Count	14	16	30
		% within In your opinion, do you think that the government has adequate skilled human resource capacity to facilitate the implementation of ICT in the entire public administration system in Ghana	46.7%	53.3%	100.0%

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		% within Does government have attractive incentives to attract and maintain human resource experts to manage the ICT infrastructure and services in the MDAs	70.0%	31.4%	42.3%
	No	Count	6	35	41
		% within In your opinion, do you think that the government has adequate skilled human resource capacity to facilitate the implementation of ICT in the entire public administration system in Ghana	14.6%	85.4%	100.0%
		% within Does government have attractive incentives to attract and maintain human resource experts to manage the ICT infrastructure and services in the MDAs	30.0%	68.6%	57.7%
Total		Count	20	51	71
		% within In your opinion, do you think that the government has adequate skilled human resource capacity to facilitate the implementation of ICT in the entire public administration system in Ghana	28.2%	71.8%	100.0%

	% within Does government have attractive incentives to attract and maintain human resource experts to manage the ICT infrastructure and services in the MDAs		100.0%	100.0%	100.0%

Figure 18: *Comparison of Respondents who think the government has adequate skilled human resource capacity to implement ICTs in MDAs against those who believe government has attractive incentives to attract and maintain human resource experts for MDAs.*
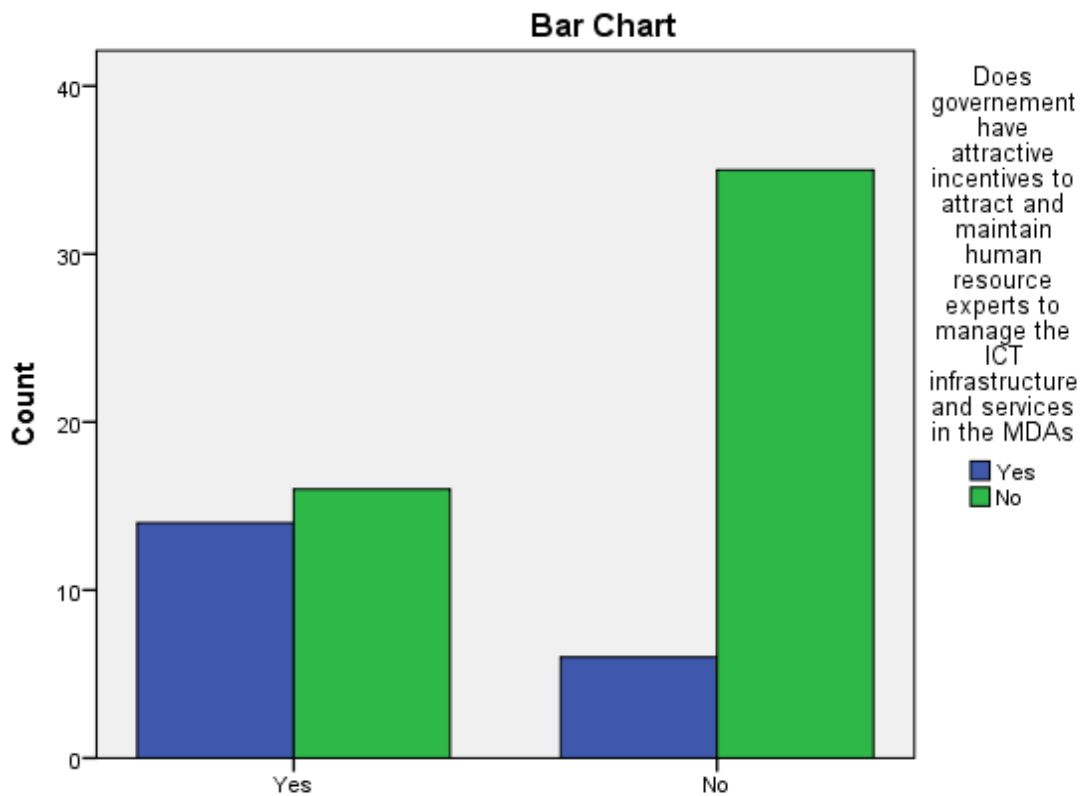

In your opinion, do you think that the government has adequate skilled human resource capacity to facilitate the implementation of ICT in the entire public administration system in Ghana?

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4.3   ANALYSIS OF THE RESULTS

4.3.1   Identify policy and programmes targeting ICTs deployment and exploitation in public institutions

The study went about to identify policies and programmes targeting ICT deployment and exploitation in public sector institutions. Table 5 above revealed that some of the MDAs have developed ICTpolicies to assist them in facilitating the effective implementation of projects and programmes in their organizations.

On MDAs operating with Policies, it was revealed that 58.4 % of the Agencies have their ICT policies, and 49% Departments also have their ICT policies in place. Whilst all the Central Management Agencies had Policies which is about 2.27% of the public sector institutions. Also, about 76.92% of the Ministries had policies facilitating their activitieswhich is 9% of the total public sector organisations.

With regards to MDAs operating without policies, the Table 5 revealed that none of the Central Management Agencies were without policies, whereas 3.73% fell under the Ministries without policies. Also, 31.68% of the Departments and 64.60% of the Agencies of the total public service organisations were without policies.

In effect, majority of the MDAs were without ICT policies at this technological age when MDAs require ICT policies to serve as a guide to outline their strategies and plans to feed into the national agenda of the country. Critically looking at Figure 10, it could be deduced that majority of Agencies have ICT policies guiding them than the Ministries and Departments

In the design of ICT programmes to facilitate the Internal Administrative Processes, Table 6 above revealed that the Ministries have 17.31% of their policies addressing their internal operations, Departments had 16.95%, Agencies 31.58% and Central Management Agencies had 35.71%.

Also, statistics in the table 6 revealed that MDAs have designed programmes to improve services to the general public. In the distribution, the Ministries have 62.69% of their programmes designed in the policies to provide improved services to the general public, whilst the Departments have 83.05%, Agencies have 68.42%, and the Central Management Agencies have 64.29% of their programmes to improve services to the public.

From the results it can be deduced that the MDAs have designed ICT programmes to provide improved services to the public to ensure that there is efficiency within the public administration system. Due to the fact that MDAs themselves have systems to enhance their operations and that of the public, it will impact positively on their internal processes to achieve desired results in the implementation of their policies.

In addition apart from these policies and programmes it is imperative that there must be sectoral and organisational ICT developmental plans to assist with the proliferation or closing of the digital divide.

4.3.2   Assessing the impact of using ICT to enhance the evaluation capacity of MDAs

In the arrangement of the public administration system in Ghana, public sector institutions are expected to monitor and evaluate their programmes and delivery of services, especially the sector Ministries, to improve the policy formulation and administrative processes or objectives.

From the research results, it was revealed that 89.3% of the respondents were of the view that employing the use of ICT for the evaluation of policies and

programmes will enhance the capacity of the public institutions. However, 5.3% of the respondents disagreed with that assertion.

The result confirms that the fact that ICTs can enhance the evaluation capacity of MDAs taking into consideration the fact that many institutions within the public sector in Ghana have limited resources in terms of funding, adequate tools and human capacity to be effectively conduct proper and efficient evaluation of the policies and programmes being implemented. Due to this fact, majority of donor funded project suffer challenges and do not yield any positive impacts because the desired monitoring and evaluation components in such projects are not followed through.

It is worth noting that since the advent of ICTs, many organizations have exploited the opportunities of ICTs to achieve organizational efficiency. Today through appropriate Monitoring and Evaluation Software, organizations can effectively evaluate their projects and programmes remotely through the use of internet. Physical data collection efforts can have a toll on the resources of the organization and it is also time consuming. When an organization employs the effective use of ICT tools such as mobile phones and tablets, applications with the capacity to create digital surveys, and software that allows users to upload data to storage facilities in real-time remotely, it reduces the effects of conventional challenges associated the routine and manual ways of evaluating our programs.

The software generates reports and charts that facilitate the decision-making process because of the ease with which it could be interpreted. The training on how to utilize the software empowers staff within the M&E departments. This approach ensures that the organization at any point in time irrespective of little resources can leverage on ICT to evaluate their programs and enhance their capacity as well.

4.3.3 Using Public Private Partnership in Deploying ICTs for MDAs

In most developing countries there are infrastructure deficits which are more acute in the ICT area. Most countries do not have the requisite financial, human, material and other resources to install the necessary infrastructures to support economic growth and development. In an attempt to resolve these issues, most countries have adopted the PPP model as a way of getting the much needed infrastructure and services available to the citizens whilst payments are differed over a period of time.

The effectiveness of private sector collaboration with governments in extending telecommunications services, is one of the best practices developed countries adapts in extending ICT infrastructure and services to the citizenry especially those in the rural areas and the poor. Thus, this system extensively introduces liberalization and brings competition in the telecommunication sectors to remove the barriers for pro-private sector policy environments conducive for investment opportunities.

The question is, should the private sector be encouraged to partner government in the provision of ICT infrastructure and services for the public administration, and how essential will that promote an enabling environment Ghana is enjoying over the last six years. Based on the research, 97.3% of the respondents agreed that the private sector should be encouraged to partner government in the provision of ICT, whiles 1.3% do not agree.

Majority of the respondents acknowledged that the involvement of the private sector in the ICT industry is pivotal in contributing immensely to the ICT environment in the MDAs. It is therefore not surprising that through the private sector support, the country is privileged with substantial fibre optic network boosting the

broadband availability of the country to enable Ghana connect with the rest of the world.

On the issue of the need for the private sector to be encouraged to partner government in the provision of ICT infrastructure and services for the public administration, the results revealed that many of the respondents were in support of the PPP. Most of them were of the opinion that such a system will go a long way to create the enabling environment to promote the development of the ICT industry. It is noted that the result has a lot of impact to the development of the country's knowledge-based ICT industry capable of supporting the growth of the telecommunication industry and enhance the delivery of ICT products and services to the MDAs in the country.

For example, assessing the PPP, the research revealed that the Ministry has facilitated the automation of the Registrar General's Department and Ghana Revenue Authority making their operations functional since December 2011, with quick and outstanding service delivery. The critical masses of users are frequently undergoing registration exercise for the use of the services.

Some of the respondents suggested the need for government to design policy that could outline a possible PPP to support the growth of a viable "high value-added" ICT services sector for the country. Other respondents suggested that this could serve as a platform to accelerated development and economic growth. In supporting the need to encourage PPP, other respondents suggested that the collaboration should be encouraged to serve as a potential engine to develop the country's ICT hub to become one stop government and business services hub.

In helping bridge the digital divide, another remarkable partnership that has expanded the ICT infrastructure base is the development of universal access. Some of

the respondents acknowledge the expansion of Common Telecom Facilities to the rural communities of the country. This is largely bringing most of the Telecommunication Operators to extend ICT services to some of the deprived communities, often referred to as "mutual technical collaboration" that can improve the communications penetration. This infrastructure in the long run will improve the ICT drive in the communities to support and accelerate the implementation of the connectivity and ICT equipment to enhance the MDAs in the communities.

It is identified that the service availability, reliability and accessibility are important and the bandwidth acquired is to be delivered by the service provider such that there should be avenues to be created for users to opt for a better service. Clearly, the partnership of the private sector to government is the best way out, since issues regarding how people can have access, affordability and dependency on ICT products and service is of great concern to the government.

4.3.4 Using ICT4AD Policy to enhance service delivery in the Public Administrative System

In assessing the public awareness of the ICT4AD policy and how the increase use through ICTs would support the implementation of ICT programmes and initiatives, it was observed that 81% of the respondents acknowledged they were aware of the policy, affirming their support to the implementation of ICT programmes and initiatives the policy identifies to enhance socio-economic development of the country. Notwithstanding the fact that majority of the respondents were in support of the ICT policy, 19% on the other hand claimed they would not support the implementation of the ICT programmes and initiatives the policy brings on board though they were aware of it.

It was also however observed that 74.1% of the respondents, who though will support the course of the ICT4AD Policy, were not aware of its existence.

It is quite obvious that even though the ICT4AD policy is the national ICT roadmap to facilitate the exploitation and deployment of ICTs in the country, majority of the respondents within the MDAs did not have any knowledge of its existence. The ICT policy identifies practical strategies which would assist in the implementation of initiatives geared towards the improvement of service delivery within the public administration system. If agencies responsible for the implementation of these ICT initiatives do not appreciate the role of the ICT policy due to lack of awareness creation, it stands to indicate that these programmes might not attain their intended objectives in the national interest.

Though the MDAs have very limited ICT infrastructure to meet the ICT capacity needs of the MDAs, it was realized that the MDAs have developed their websites which are frequently updated to ensure that their clientele have access to current information. The respondents indicated that they are able to access service online which has had a great impact on them because they able to access these services at the comfort of their home and are able to save a lot of time they would hither to used to travel to access a public service. This therefore implies that if the ICT4AD policy roadmap is comprehensively publicised, it would influence the development agenda and also generate the utilization of effective ICT tools to enhance the services delivery.

In effect, the country cannot achieve the socio-economic development if efforts are not made by government to facilitate the use of ICT policy in the MDAs. It was therefore on a high side to realize that 74.1% of the respondents did not have any knowledge of the existence of the ICT policy and what it stands to achieve. It

symbolises that the government is not facilitating the effective education required to get MDAs to accept the policy to enrich them with new and emerging ICTs to improve the ICT industry that will support governance and enhance their day-to-day administration.

What this means is that, the respondents see ICT application (browsing the Internet) as the simplest way to reduce time spent on work bringing innovations into delivery of services to the general public. People who never saw the need to waste time enquiring on issues from government employees now rely on the available technologies to get information online, promoting efficiency and deepening good governance as well as public trust.

Furthermore, the policy has been revised to include other thematic areas including Broadband, Geographical Information Systems, Cyber Security, ICT, Climate Change and Environment. The need for other sectors to develop additional plans and strategies is very important and would help to bridge the digital divide.

4.3.5   Evaluating the Effects of the Introduction of e-Government

The introduction of e-government in any public administration system is to principally, reform, innovate, change and improve productivity by way of introducing efficiency and effectiveness in the public service delivery.

Regarding the knowledge of respondents of the existence of the e-government network and associated infrastructure project, and whether these can enhance efficient delivery of public services to the citizenry; based on the research, 82.7% claimed the e-government network infrastructure connectivity can enhance efficient delivery of public services to the citizenry. Whilst 17.3% of the respondents had mixed feelings of the positive impact the e-government network infrastructure could have in enhancing efficient delivery of public services.

Recognising that the e-Government network can provide a number of ICT applications to bring MDAs on a platform to electronically access important government services, government must intensify efforts for the expansion of the fibre optic network across the country to provide adequate broadband capacity, as well as completing the building of the national data centre to provide e-services among others to serve as a means to support government in bring ICT closer to the citizenry to enable them benefit from the services to collaborate effectively.

Since the infrastructure will require the necessary ICT tools to facilitate the processes, it is important for government to be committed to the provision of adequate and modern ICT products and advanced ICT tools for the MDAs to equip the employees for easy application that can enhance the delivery of services and provide competitive advantage for the country in the International arena.

In order to provide the expected knowledge economy for the country, the e-government network platform should serve as a spring board to new ICT skills and innovations that can promote the capacity of the staff to provide unique performance on the network.It is noted that the kinds of services being deployed by the network is largely to expand services such as Ghana's e-Payment for instance could help broaden the scope of payment options and also streamline payment processes online. Also with the installation of the-e-government application for business registration and revenue collection agencies, indications are that services are improving both for the respective organisations and clients.

4.3.6   Assessing the effect of improved ICT skills on the service delivery of the public administration system.

ICTs by their very nature require skills to operate and manage these systems in order not to be a bottleneck in the service delivery process and administration. In the current implementation the highly technical components have been outsourced which at times creates a grey area in terms of who is responsible for lapses.

The results of the study pointed out that 46.7% of the respondents were of the opinion that the government has adequate skilled human resources capacity to facilitate implementation of ICT in the entire public administration system, whilst 53.3%of the respondents believed the government does not have the requisite human resource capacity to support ICT implementation process.

Also, the results revealed that 14.6% of the respondents were of the view that government has attractive incentives to maintain human resource experts to support the improvement of the operations of the MDAs. However, the results indicated further that 85.4% of the respondents were of firm believed that government does not have attractive incentives to attract and maintain the needed human resource capacity to facilitate the implementation of ICTs in the entire public administration system.

The results confirm the assertion that a country cannot achieve efficiency and effectiveness in public service delivery when it does not have the skilled human resource capacity to implement the needed policies that can facilitate the development of the country.

The results therefore means that the country's ICT infrastructure expansion and the provision of the modern ICT infrastructure and tools can promote the efficiency of the ICT industry when efforts are made for the right human resource

capacity to manage the available infrastructure and tools to achieve the expected results.

In this connection, policies must be streamlined to commit government into putting adequate resources into the development and maintaining the requisite human resource personnel that can effectively manage the operations of the MDAs.

It is noted that ICT has become dynamic dealing with technicalities and new technological innovations and therefore requires skilled human resource capacity to appreciate and pursue the adoption of these new enhanced technologies that can promote the operations of MDAs to become efficient. As mentioned earlier, government is unable to attract and maintain the requisite personnel, partly due to lack of commitment to provide the personnel with the right remuneration that could commensurate their output. They are therefore often poached and relocated to private sector jobs where they are secured with higher incentives.

With regards to policy, since all the MDAs have coherent set of policies and programmes, which are guided by the strategic ICT policies and plans, efforts should be made to incorporate the technical IT personnel in the mainstream ICT projects and programmes of the MDAs. It is expected that this move will enable them have strong networking and firm control to be able to monitor ICT implementations effectively.

In addition even though a sizeable number of respondents believe that Government of Ghana has the skilled staff to operate, the systems may be true for the low end but not the middle level and the high level technical skills. It is important that future programme must identify and develop some of these technical skills in order not to leave these critical systems in the hands of non employees, such as the private vendors and foreigners which could be detrimental to the interest of the country.

CHAPTER FIVE

5.0   SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1   INTRODUCTION

This chapter will summarise the various findings that the researcher made from the numerous data gathered. Based on lessons learnt and the various conclusions that were obtained from the analysis from the respondents, requisite policy recommendations will be produced.

5.2   SUMMARY

The main aim for undertaking this research was to identify if the introduction of ICTs in the operations of the MDAs is improving the Public Administrative system of the MDA to promote and enhance service delivery.

The first chapter sought to examine the availability of policy and programmes the Ministry is instituting to address the ICT needs of the government's MDAs, in order to promote the use of the available ICT tools being provided through the e-government network infrastructure.

In adopting an approach of gathering the appropriate data and information to meet the expected objectives, the method adopted was to sample the view and opinions of the MDAs. In order to facilitate proper analysis of the data gathered and to provide suitable findings for the research, the study sought to sample views of respondents from the Ministerial Enclave in Accra, which serves as a hub for government activities accommodating most of the Government Ministries. The area provided the researcher a clear picture of how the MDAs were adopting the available

ICT tools within the enclave to share information through government networks to facilitate the delivery of services.

The study indicated that numerous opportunities challenges in the ICT sector requires strong and vibrant ICT policy with appropriate technology as a roadmap to achieve the necessary impact. Therefore when concrete policies are not streamlined to effectively aligned with the country's ICT developmental agenda it will be difficult to drive the nation's developmental efforts.

The research further revealed that the facilitation of implementing an effective broadband policy for adequate capacity provides a reliable platform to facilitate and promote the success of other ICT infrastructure and tools to meet the total demand of the MDAs. It was ascertained that building the country's fibre optic network could enable the country relate with the International community to adapt best practices.

The research identified that service delivery in the government administrations in Ghana has been by old and unfashionable methods which are often classified as outmoded. Most offices in government administrations have access to telephones, computers, fax machines, among others,personally-owned devices to facilitate communication and delivery of services. The research identified e-government as an effective means where communication and interactions are well linked with appropriate ICT tools to provide adequate connectivity to facilitate and promote service delivery to the citizenry.

From the Ministerial point, the ICT infrastructure and e-government network are providing application of electronic data capable of facilitating effective communication that could expose the country's MDAs to new modernized ICT infrastructure, and advanced electronic devices and ICT applications for MDAs to enhance their operations. The introduction of e-government and the role the

implementing Data Centre facility will play in meeting the ICT needs of the MDAs, housing the important data for government.

The promotion of enabling environment is always keen to focus the various identified stakeholders for the successful implementation of ICT in the MDAs. Most importantly, the role of the Ministry of Communications, NITA, MDAs, PRAAD, and the Private Sector in building effective partnership in the building of infrastructure and services, as well as the usage of the ICT applications by the MDAs to facilitate efficiency.

Notwithstanding, the picture in the rural areas is not pleasant looking at the fact that the ICT infrastructure expansion (e.g. fibre optic network) has not reached the rural communities and the e-government infrastructure is currently being utilized effectively in the Ministerial enclave, based in Accra. There is therefore inadequate ICT access to the rural areas of the country to give proper connectivity and collaboration in terms of bringing government services online to enable the departments and districts in the rural communities access Internet, and government information effectively. Notwithstanding, some of the respondents expressed dissatisfaction of the delay in government deploying ICT infrastructure to reach the entire country to facilitate easy Internet access to promote intra-organization medium of communication irrespective of which part of the country an MDA is located in the country.

5.3   CONCLUSIONS

In conclusion, it is noted that experiences worldwide in supporting ICT policies and projects requires that countries present, nurture and implement policies and projects that can effectively sustain the country's ICT development. In connection

of this, for a country to have the capacity to build sustainable ICTs in the public Administrative systems, it is important that recognition is given to the country's available bandwidth capacity, thus dealing with the country's limited capacity.

The establishment of an e-government infrastructure is keen to the government's aim at building a cost-effective and sustainable ICT infrastructure aimed at helping the country bridge the digital divide by eliminating the slow pace of implementing government's policies and programmes.

It is noted that the expansion of the country's ICT infrastructure through the e-government project presents opportunity for Public Private Partnership, to facilitate investing in the technological innovations is the best way to help government limit the burden on local investors. This will also promote the nations ICT infrastructure to meet the international standards and adoption of best practices.

The nation can through the e-government project adopt new technologies enhanced to improve the nation's competitiveness on the global arena. Ghana can effectively harness the opportunities ICT offers to considerably promote the use of ICT as a tool to streamline administrative workflows and also modernize government machinery. To a large extent, this can increase government's accountability, transparency and efficiency.

5.4   RECOMMENDATIONS

Assessing the research done and the analysis obtained, the need for ICT as a potential tool in enhancing the operations of the public administrative system has been established. The existence of government's full participation and implementation of ICTs in the day-to-day administration of MDAs has been recognised as the

appropriate means at which the modernization of ICT industry could be realised. The following are my recommendations:

5.4.1 MDAs Organisational Capacity Building

Government should encourage organizing ICT-for-development projects and programmes to build sustainable ICT capacity in MDAs. Measures should be taken to ensure that governments outline ICT programmes to empower the MDAs to enable them play a responsible role as ICT development actors to effectively partner the Ministry in executing the ICT agenda of the country, especially, the e-government agenda.

5.4.2 Broadband policy

Government should support the Ministry of Communications to finalizing the work on the broadband policy aimed at engaging the services of appropriate industry players to ensure that universal access incorporates broadband accessibility. There should be need to protect the fibre optic infrastructure expansion through engagement of stakeholders to streamline strategies to curb rampant cable theft which can affect Ghana's opportunity to join the information society.

5.4.3 Improving ICT Infrastructure

Government should adapt measures to build a vibrant telecommunications industry to address some core ICT applications including terminal equipment, extension, last miles solutions and Wireless systems to facilitate ICT deployment and utilization in the rural areas.

Furthermore, since technological advancement of the ICT industry has brought growing amount of demand for computers and access to internet connectivity, governments' total commitment is required to adapt programmes that are focused on

increasing country's bandwidth availability and usability as well as, ensuring there is constant supply of ICT equipment to the MDAs.

5.4.4 Promoting ICT Culture

There should be proactive measures by the MDAs to create an acceptable internet culture amongst the MDAs to ensure that staff will be comfortable in using the available e-government platform services online. Attention must be created by the Ministry to facilitate a policy that can enforce all MDAs to monitor the use of internet in their offices to promote data gathering online that can streamline government information access to support policies and programmes. Therefore efforts should be made to ensure that most of the MDAs where staffs do not attach much importance to accessing information online are encouraged to use ICT applications for proper official use in accessing government information.

5.4.5 Security Awareness and Cyber Security

In order to minimize risks associated with computers, computer servers and other equipment for the smooth implementation of the e-government policy, government must engage services of expert IT security institutions. Also, there must be security awareness creation to educate the employees of MDAs, who will be the direct beneficiaries of the ICT networks and available systems and applications to equip them on how to use the network without compromising on the security implications that comes with ICT.

The general public who will use the network to interact with the MDAs must also be educated to ensure that they in turn do not compromise on the network and other security implications in accessing information on the internet. It is recommended that the Ministry considers some policy initiatives that could enable

ICT experts block prohibited sites that could potentially lead users into Internet fraud in accessing the e-government services.

In order for government to use e-Government services to build trust amongst users to make ICT systems become more reliable to encourage users' accessibility, government must design policies to address the rampant reported cyber crimes in the country. The requisite Acts and regulations must be implemented to improve and secure the system assurance with effective ICT strategies that can effectively link together various administrative systems to ensure efficiency in service delivery.

5.4.6 Creating the Enabling Environment

In order to provide a legal regulatory environment for the telecommunication sector, Ghana has passed the following Acts and Legislative Instruments: Electronic Transactions Act; Electronic Communications Act; National Communications Act; National Information Technology Agency Act; Data Protections Act. Monitoring should be enhanced for the implementation of additional laws including, e-Signature, Public Key Infrastructure, Certification Authority and e-Waste, to be passed to ensure that the necessary enabling environment required for the institution of systems that are conducive for the implementation of ICT policies and initiatives iscreated.

5.4.7 Records Management

Since the paper-based system in gathering data and tracking information on government activities and policies are capable of generating errors, it is important that there should be well structured records management systems to support and promote a reliable data and records for the MDAs. Efforts must be made for effective collaboration of identified stakeholders to share reliable information through the application of ICT in the delivery of services to the general public.

5.4.8   Human Resource Capacity

MDAs must invest in the provision of technical support to the general employees in building their capacity with the requisite skills and knowledge to enable them contribute to the entire organizational change to promote efficiency.

Government should design policy to facilitate the recruitment, retention and training of IT personnel, to enhance career development. Their salary and remuneration must commensurate to their technical skills and output. To prevent them being often poached by the private sector for better remuneration. This knowledge and skilled human resources must become integral part of the design of the ICT applications incorporating the roles required for the successful implementation of the various projects and programmes.

Largely, the inadequacies of such requisite technical and managerial skilled personnel can derail the impact of the ICT wing aimed at supporting the overall policies and programmes of MDAs.

5.4.9   Funding of ICT

The inadequate government funding in meeting the huge cost of ICT infrastructure and equipment derails the expansion of adequate access to ICT infrastructure and sustainability of projects. Therefore government must adapt constant and regular strategic negotiations with donor agencies, and other private sector players to provide support in the expansion of ICT infrastructure, to facilitate the management of the scarcely available bandwidth and other accompanied ICT products.This can promote the expansion of ICT infrastructure and services to the entire country, especially, the deprived communities.

5.4.10 Development of Policies to Guide the Operations of MDAs

Since the MDAs play a critical role in supporting the implementation of the national ICT4AD policy, it is recommended that MDAs without policies must be encouraged to develop one to facilitate effective collaboration in achieving the overall government vision of expansion of a modernised ICT infrastructure for the country. It is expected that this will eliminate the disjointed and uncoordinated policies being implemented by the MDAs, thus ensuring they are aligned with the focus and vision of the country.

APPENDICES

APPENDIX

QUESTIONNAIRE

With the advancement in technological innovations worldwide, every government requires new technologies to ensure a change from the manual method of running government business to a more scientifically innovative way. The introduction of ICT in the Ministries, Departments and Agencies (MDAs) is identified as one of the most important means to bring efficiency and effectiveness into government. This will create direct access to government information which to a large extent will improve the service delivery of the MDAs. The ICT4AD Policy document has outlined number of activities to support the introduction of ICT in the various MDAs to promote the use of ICT in service delivery. The research is to identify if the provision of ICT infrastructure and the e-government network platform being implemented will bring the various MDAs under one platform to effectively use ICT applications to improve service delivery.

The information obtained here are going to be used for academic purposes to help the researcher fulfil part of a study on "ICT as a Potential Tool to Enhance Public Administration System in Ghana – A case for the Ministry of Communications."

Please note that names of respondents are not necessarily required. You are also assured that your views and answers will be used for academic purposes only and absolute confidentiality is also guaranteed. Your quick and objective assistance and response to the following questions to facilitate the success of the research work would be very much appreciated. Please tick the appropriate answer and kindly provide your comments where necessary. Thank you.

Section (A)   BACKGROUND INFORMATION OF RESPONDENTS

a.   Name   of Organization………………………………………………………………...

b.   Position of Respondent: a. Junior Level [   ]   b. Senior Level [   ]
        c. Management Level [   ]   d. Others, please specify……………………

c.   Number of years of Work Experience:
        a. 0-5 years [   ]   b. 6-10 years [   ]   c. 11-15 years [   ]
        d. 16-20 years [   ]
        e. 21 years and above [   ]

d.   Gender of the Respondent: a. Male[   ]   b. Female   [   ]

e.
Educational Level of Respondent:
  a. Junior High School [   ] b. Senior High School [   ]   c. HND [   ]
  d. Bachelor's Degree [   ]   e. Master's Degree   [   ]
  f. Others (Specify)…………………………………………………………

Section (B)   USER ACCESS AND KNOWLEDGE IN ICT

1.   Do you have access to Computer in your office?

       a. Yes [   ]   b. No [   ]

2.   Please indicate the kind of services you use the computer for?

       a. Office Applications [   ]   b. Internet Browsing [   ]

       c. Play Games [   ]d. Others, please specify………………………

3.   Do you have access to Internet in your office?

       a. Yes [   ]   b. No [   ]

4. (a) Apart from the office, do you also access the Internet at Home?

       a. Yes [   ]   b. No [   ]

(b)   If yes, please indicate how regular you use the Internet at home.

       a. Once [   ]   b. Occasionally [   ]   c. Weekly [   ]   d. Monthly [   ]

       e. Never [   ]

5.   Do you think there is full utilization and maintenance of available ICT
equipment and applications in your organization?
       a. Yes [   ]   b. No [   ]

       c. Please give reasons for your answer above………………………………
…………………………………………………………………………………………
…………………………………………………………………………………………

Section (C)   POLICY IMPLICATION IN THE IMPLEMENTATION OF ICT

6.   Are you aware of the Information Communication Technology for
Accelerated Development (ICT4AD) policy facilitating ICT usage amongst MDAs.
   a. Yes [   ]   b. No [   ]

7.   Would you support the implementation of ICT programmes and initiatives
identified by the ICT4AD for the socio-economic development?

   a. I would support because Ghana Community Network (GC Net) System
   implemented has enhanced Port clearance of goods   [   ]

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b. I would support because the Ghana Integrated Financial Management Information System (GIFMIS) being implemented to assist government treasuries to improve macro-fiscal discipline and management   [   ]
c. I would support because the West African Examinations Council (WAEC) provides online services to second cycle schools [   ]
d. May Be I will support   [   ]
e. No, I will not support   [   ]

8. To what extent can ICT enhance the planning capacity of the MDAs in the execution of policies?
a. Very High [   ]   b. High [   ]   c. Moderate [   ]   d. Slightly [   ]

e. Very Low   [   ]

9. In your view, will the introduction of ICT in the execution of policies and programmes improve the implementation and evaluation capacity of the MDAs?

a. Yes [   ]   b. No [   ]

10.   In your opinion, do you think the increase use of ICTs in the delivery of public services has improved the operations of public services?

a.   Time spent to access services shortened   [   ]

b.   Some information can be accessed via Internet which saves cost   [   ]

c.   Responses to inquiries are efficiently delivered on time   [   ]

d.   No change after the introduction of ICT in service delivery [   ]

11.   Do you think budget support for deployment of ICT in MDAs is adequate to cause a change in public service delivery?

a. Highly Adequate   [   ]

b. Adequate   [   ]

c. Inadequate   [   ]

d. Not At All   [   ]

Section (D)   IMPACT FOR USE OF E-GOVERNMENT

12.   Have you heard about the e-government network infrastructure project by the government?
a. Yes [   ]   b. No [   ]   c. Some How [   ]

13.   Do you think the e-government network infrastructure connectivity to public sector offices in the country can enhance efficient delivery of public services to the citizenry?
a. Yes [   ]   b. May be [   ]   c. No [   ]

d. Please comment on your answer.............…………………………………

…………………………………………………………………………………..

14.	In your opinion, do you think that the government has adequate skilled human resource capacity to facilitate the implementation of ICT in the entire public administration system in Ghana?
    a. Yes [   ]   b. No [   ]

    c. Please comment on your answer....…………………………………………
15.	Does government have attractive incentives to attract and maintain human resource experts to manage the ICT infrastructure and services in the MDAs?

        a. Yes [   ] b. No [   ]

16.	Would you support the establishment of an agency to recruit, train and maintain these experts for Government of Ghana to manage the public administrative system?
        a. Yes [   ] b. No [   ]
17.	Should the private sector be encouraged to partner government in the provision of ICT infrastructure and services for the public administration?
    a. Yes [   ] b. No [   ]

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