ASHESI UNIVERSITY COLLEGE

THE QUEST FOR INFORMATION:

A STUDY OF DATA AVAILABILITY IN GHANA'S GOVERNMENT

By

GODFREY JOJO AINOOSON

Dissertation submitted to the Department of Business Administration,

Ashesi University College.

In partial fulfilment of the requirements for the award of Bachelor of Science degree in
Business Administration

April 2013

Declaration

I hereby declare that this dissertation is the result of my own original work and that no part of it has been presented for another degree in this university or elsewhere.

Candidate's Signature: …………………………………………………………………………..

Candidate's Name: GODFREY JOJO AINOOSON

Date: 20th April, 2013

I hereby declare that the preparation and presentation of the thesis were supervised in accordance with the guidelines on supervision laid down by Ashesi University College.

Supervisor's Signature: ………………………………………………………………………….

Supervisor's Name: DR. LLOYD AMOAH

Date: 20th April, 2013

ABSTRACT

The development of the country is severely hampered by a lack of research into our problems and effective ways of solving them. This underdevelopment of the nation's research capabilities is attributable to a lack of data that is necessary for information to be produced by the research. Using Ghana's e-government policies and the National Information Technology Agency as a case study, this paper discusses how the data availability level is promoted or undermined as Ghana's inexperienced researchers try to gather data for their work. The principal finding of this research was that data availability was undermined by the infrastructure and policies in place in Ghana.

For the development of the country's research capabilities to help solve our problems, the institutions meant to aid research must be given the ability and support to do so, and the requisite laws have to be passed. In other words, an enabling environment for research pursuits must be constructed to support and develop the nation's research abilities.

Contents

List of Tables

LIST OF FIGURES

Table of Contents

Chapter 1

Introduction

As a developing nation, research can be perceived as one of the fundamentals for progress, and when there is a rise in research there is a corresponding need for more and more data. As anyone who has tried to do research in Ghana can testify, getting secondary data on Ghana, and Ghanaian government institutions in particular, is very difficult. This is because databases in Ghana are ineffective at best or non-existent at worst. Most of our information is still in analogue form (i.e. on paper) and this makes accessing that information very cumbersome (Darch & Underwood, 2005) (Ngulube, 2007), and in the institutions where databases are available, the information they have can be quite scanty. Without quality information that is easily and readily available, research is severely hampered in solving our problems as a nation, as it helps produce the knowledge necessary to rule.

This is where the National Information Technology Agency, NITA, comes in. Part of its mandate is to implement e-government in government and improve government databases by setting up a high-speed government-wide communications network that will connect key Municipal and District Assemblies (MDAs). The purpose of this is for sharing information and applications, as well as securing government databases, in accordance with its general purpose to bring Ghana's government into the 21st century of digital information and interaction with the people.

This work seeks to study data availability in Ghana, emphasising on government institutions, and how NITA and its activities can help allow for more data to be made

available to the general Ghanaian public, and the world at large, through electronic mediums, i.e. the internet.

1.1 Background to the study

Entities have always kept records of factors they have deemed important, be they countries, companies or people. However, just having the data in a file cabinet in a back room somewhere is of limited use to anyone. With the advent of the technology and information age, accurate and timely data has become ever more important to us (Backus, E-Governance and Developing Countries: Introduction and Examples, 2001), and the ability to keep these records for longer and in a less perishable and more transferrable format than paper is increasingly sought after. Currently, data has become so ubiquitous that sorting through it is more of a problem than actually getting it in most cases (Fayyad, Piatetsky-Shapiro, & Smyth, 1996). Ghana is not "most cases". Finding and gaining access to government data in Ghana requires running a gauntlet of government officials, before getting access to mountains of paper files kept in storage. Government is still the largest repository of data in most countries (Heeks, Government Data: Understanding the Barriers to Citizen Access and Use, 2000), and this is where NITA and its mandate to streamline and integrate government databases will prove a boon to the nation.
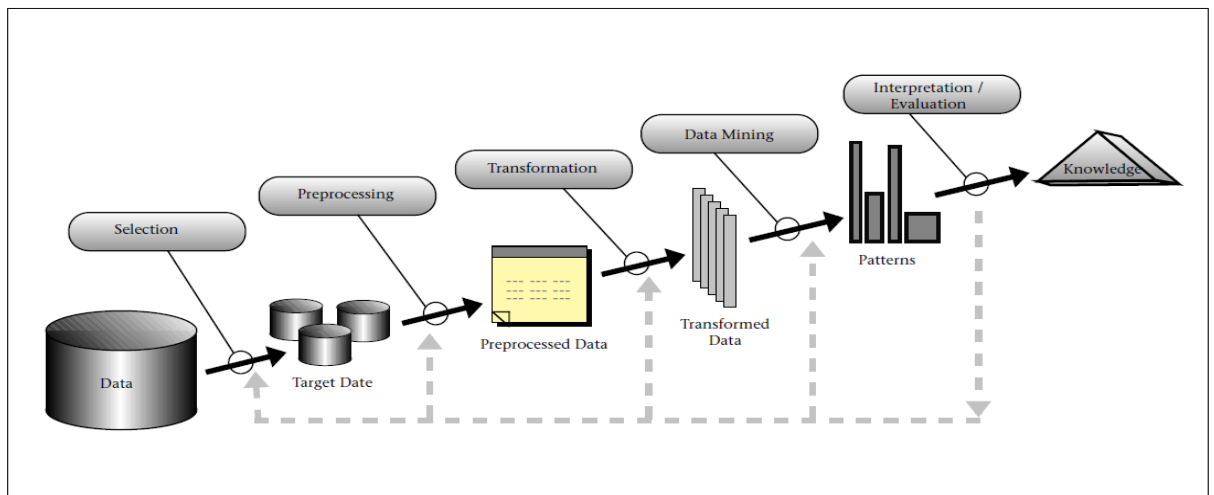
Figure 1: Map showing the path from data to knowledge through a database (Fayyad, Piatetsky-Shapiro, & Smyth, 1996)

NITA was established in 2008 by Act 771. It is a public service institution, set up as the Information Communications Technology (ICT) policy implementing arm of the Ministry of Communications (National Information Technology Agency, 2010). It was formed to ensure the successful take-off of e-governance in Ghana, and its mandate includes identifying, promoting, and developing innovative technologies, standards, guidelines and practices among government agencies and local government. They also ensure the sustainable growth of ICT via research and development planning and technology acquisition strategies to facilitate Ghana's prospect of becoming a technology-driven, knowledge- and values-based economy, as put forward in the e-Ghana project.

Other IT agencies, like the Ghana Investment Fund for Electronic Communications (GIFEC), have been set up by the government to tackle the various IT challenges of the country. However, NITA is the one agency out of all of them that is most directly concerned with the collection and propagation of data digitally, so they are the agency most suited to improve data availability in the government of Ghana.

Databases are organised collections of data. They are designed to offer an organised mechanism for storing, managing and retrieving information, done so through the use of tables (Chapple, 2012). National databases, therefore, are government databases that collect personal information for various reasons, like mass surveillance, economic growth, taxation and migration. The National Data Centre meant to be one such database.

1.2 Objectives

The study seeks to assess data availability in Ghana, and what effect NITA will have, as the e-government implementing organisation of the government and of its ICT for Accelerated Development policy (ICT4AD), in improving it. This is pursued in this study by examining Ghana's e-government ranking in the various ranking systems, as well as the general requirements for a successful e-government initiative, like freedom of information legislation. The core of this study, therefore, is to find out how well the Ghanaian government provides data to its citizens, and how NITA is performing its role in providing information.

NITA aims to enhance e-governance in Ghana, and this is necessary for democracy and development in the 21st century. As such, recommendations will also be made to address how information can be made more easily.

1.3 Problem Statement

Development is a process that is empowering to a people. It is about individuals, acting alone or in groups, to better their lot in life. This process starts with identifying their problems, then stating their requirements, and finally finding solutions to their particular problems. Research is an integral part of this process, as it applies to all

three stages of development. Research finds problems, states what is needed, and suggests what should be done. Yet, how can research be done without data? Without data, research is just conjecture, with no basis in reality.

Data accessibility is of crucial importance because it is the access hatch through which repositories of vast amounts of information are made available and useful to researchers. Databases are a strategic tool in the hands of researchers, as they allow for more information to be kept and analysed easily, which makes the work of researchers more relevant and more applicable. This is due to the fact that they contain real world information, and not just speculation and guesswork. There is the need to encourage more research is done, as this contributes to the store of knowledge Ghana has as a nation, and this will make us better prepared to answer the questions it faces now and those that will come up as Ghana continues to develop.

Thus, the problem, as identified by the researcher, is the lack of government data and/or access to said data, especially through electronic means in Ghana.

1.4 Mode of Data Collection

Data used includes both primary and secondary data. Secondary data was collected from the position of Ghana in international rankings and indexes measuring data availability and e-government, using data from the United Nations Public Administration Programme, Ibrahim Index on African Governance, E-Government Readiness Index, Information Society Index, and Digital Opportunity Index for analysis. Primary data was also collected, which involved semi structured interviews with staff from NITA, and questionnaires for students. Data was also collected from online resources, appropriate agencies and persons who were able to provide more information for the topic under study.

1.5 Scope and Limitations

This study is limited to government and government related agencies and organisations, so as to enable the study relate accurately to the level of availability of data for research in the government databases of Ghana. For example, a research project which is broad in scope is assessed on how readily available and accurate the data is and how these undermined or aided the research project.

The organisations selected for study were all found in the Greater Accra Region, as it is the seat of government, and also has the highest number of tertiary institutions in the nation (24 out of 49) (4ICU, 2012)

One of the main limitations was that some of the indices and ranking systems used did not break down their system of grading, so ascertaining Ghana's scores on particular variables was difficult, so proxy indicators had to be used in some cases. Related to this limitation was that the number of e-government ranking systems that included Ghana was rather small, even though the number of systems overall was quite large.

1.6 Organization of Study

The study is organized into <u>five</u> chapters.

Chapter One is the introduction and provides the reader with general information about the area of study and links to the specific research agenda which looks at the link between data for research, government databases and NITA. The chapter also includes the objectives, research questions and mode of data collection. It details the extent of the study as well as its limitations.

Chapter Two contains the literature review, and explores the prevalent schools of thought of academia, practitioners and other commentators regarding the area of study.

Chapter Three is on the methodology employed in collecting and analysing the data collected for the study. The sampling and data collection processes, as well as the basis on which interviewees were selected are also outlined.

Chapter Four analyses the data collected and discusses any pertinent issues arising from the data and other research questions.

Chapter Five sets out conclusions from the findings of the study. Recommendations are made in respect to the findings, which can be used to make well informed policy decisions, as well as further areas of study.

Chapter 2

Literature Review

As a country grows and progresses, the essence of information for all functions grows exponentially. This is because with a growing population, government, and economy, all knowledge is valuable, and knowledge gleaned only of the outside world, with no native input or feedback is of limited use in solving native problems. Decisions made today have a cumulative effect, and the impact, positive or negative, increases with every year. Without adequate information, good decisions are difficult to make (Eschenfelder & Miller, 2007), and their effects are harder to unmake.

With the rate of development the world is experiencing right now, Ghana cannot afford to be complacent in terms of the amount of data made available for public perusal. Many nations have recognised the need to have information flow freely from the government to the people and back again. And not just any information, internally generated with no resemblance to facts on the ground. The information needs to be accurate, unbiased, because as H.E. Thabo Mbeki said, "access to information and communication technologies is what will empower us to do things that will change our lives, our country and our continent for the better" (Economic Commission for Africa, 2007).

Literature on this topic falls mainly under the broader topic of e-governance, and as NITA is a means by which the Ghanaian government seeks to fulfil its e-governance objectives, and data availability is one of the prerequisites of the e-government movement, most of the literature reviewed will be on e-government and associated topics as well Ghana's efforts to accomplish it.

In order to adequately cover and review the research area, the literature review has been divided into three main areas; first is data availability, then the state of e-governance in Ghana, and finally how NITA and its activities are going to make more data available in Ghana. This has been done because the study is on data in Ghana, focusing on government provided data. Data provided by the government is one of the aims of e-government, and is directly applied in measuring it in some indexes. As such, literature on e-government is also necessary to understand how the government of Ghana provides data to researchers, or will do so in the future. Finally, literature on NITA and institutions like it are also reviewed because they are the agency tasked with helping government attain its e-government objectives (in Ghana's case the ICT4AD policy).

2.1 Data Availability

Data availability, according to the PC Magazine Encyclopaedia, is the degree to which data can be instantly accessed, and is mostly associated with service levels that are set up either by the internal IT organization or that may be guaranteed by a third party data centre or storage provider. However, for the purpose of this research, the definition of data availability is being expanded to include the amount of information available online, as well as how that data can be accessed easily.

In Ghana's case, two main impediments to data availability are the lack of freedom of information laws, and the poor infrastructure.

2.1.1 Freedom of Information (FOI) Laws

The concept of having laws that allowed public access to government information is not a new one. The roots of the FOI principle date back to the Age of Enlightenment

(circa 18th century). The world's first freedom of information act was passed in 1766, by the Swedish parliament, the key achievements of which were the abolishment of public censorship and the gaining of public access to government documents (Anders Chydenius Foundation's Publications 2, 2006). The Freedom of Information Act of the USA was "passed to pierce the paper curtain of bureaucracy that shields federal government operations from public view" (Katz, 1969-1970). Freedom of information is intended to provide citizens with the knowledge necessary to govern (Cate, Fields, & McBain, 1994). And as getting that knowledge needs having data made available to the public, it is one of the most important legislations that can be passed to enhance data availability.

Colin Darch and Peter Underwood in their research into freedom of information legislation, state compliance and the discourse of knowledge in South Africa found that the Promotion of Access to Information Act (PAIA)-South Africa's FOI law- was a failure, even though its provisions represented liberal Enlightenment values. Reasons given for the failure were:

- A lack of political leadership and guidance in response to the Act

- The lack of state resources to ensure effective implementation of the Act;

- The absence of an accessible independent oversight body and appeals mechanism other than the High Court

- Disproportionate nature of South Africa's 11 official languages i.e. official business (of government, education, social communication, and literature) is conducted in English, whereas 45% of South Africans cannot understand or understand very little of the information provided due to language barriers

The last point is not restricted to South Africa, but can be found across Africa, in countries like Tanzania and Burkina Faso, as well as Ghana, all of which have various indigenous languages (African Studies Center, 2010) (Nations Online, 2012).

The two main reasons found for the failure of FOI legislation, according to Darch and Underwood, are state compliance and the discourse of knowledge. State compliance refers to the level of willingness state institutions have in providing information requested. Table 1 shows the Robert-Snell model of the five categories of compliance, which affects how much information the government (in the form of various state institutions) supplies the populace, and their willingness in doing so.

Table 1: The Robert-Snell 'willingness/capacity continuum' and its impact on data availability

High Capacity	Proactive Compliance	Information made available before requests
High Willingness		Exemptions waived
		Review perceived as quality control
Capacity	Administrative Compliance	Co-operative attitudes
Willingness		Exemptions used minimally
		Review seen as guide to future decisions
Low Capacity	Administrative Non-compliance	Inadequate resources
Willingness Doubtful		Poor record keeping
		FOI accorded low priority
Low Capacity	Adversarialism	Us and Them attitudes
Low Willingness		Exemptions resorted to
		Delaying tactics
		No explanation
Capacity Irrelevant	Malicious Non-compliance	Shredding
Unwillingness		Information not recorded or filed
		Documents removed from files
Adapted from Snell (1999, 2001)		

It is important to note that both the compliance (supply) and the demand for FOI (discourse of knowledge) in South Africa, according to the authors, are low. So even though the law is there, the institutions do not comply, and the citizens do not, or cannot take advantage of it due to linguistic and infrastructural barriers. This is an important aspect to note, because without state institutions being willing to give out information and procedures and processes in place for all to have access to the information, Ghana's Freedom of Information Bill will not accomplish much.

Heeks addresses the problems of e-government in a number of papers for the Working Paper Series for the Institute of Development Policy and Management of the University of Manchester. In "Government Data: Understanding the Barriers to Citizen Access and Use" (2000), he analyses the barriers citizens face in getting access to government data, as well as freedom of information legislation. He recognises three barriers to access i.e. data availability, technology and other resources to access the data, and freedom of information legislation. On data availability, he outlines 3 possible government views on data, some of which create barriers to access. These views are that: data is a private asset (data is owned by the department which owns the computer on which that data resides); data is a public asset (owned by everyone data gathered about and from everyone); and data is not an asset (data is not important enough to warrant open consideration of issues of ownership, value and charging). The first two are barriers, in that they involve paying for access to the data, with the "data is private" view entailing more costs. Making data available electronically is another barrier to access, due to problems such as a lot of government information is still paper based, the need to collate and process data manually, and no mandate or framework to make data available electronically.

Another barrier is the citizen's ability to access that data. Be it because of reasons like lack of money/time, the knowledge that such data exists, or motivation, without these access resources, data availability is a null gain. The most discussed aspect of data accessibility is IT, mainly because it is "sexy and tangible" (Heeks, Government Data: Understanding the Barriers to Citizen Access and Use, 2000). It is, however, a double-edged sword. IT has made it far easier, quicker and cheaper to access government data, On the other hand, IT has brought about a digital divide, where one group reaps the benefits of IT-enabled accessibility, and the other group cannot. This is illustrated by the fact that, as at 2011, internet usage had reached 14.11% of the population, up from 4.27% in 2008 (Dogbevi, Internet users in Ghana reach 14.11% of population in 2011 - ITU, 2012). This means that 85.89% of Ghanaians do not have access to electronically available information. It must be noted as well that, the digital divide is costly to those who have access to IT, as it requires a computer, a network connection etc., whereas by comparison, actually reading paper-based materials costs little or nothing (Heeks, Government Data: Understanding the Barriers to Citizen Access and Use, 2000)

The availability of data in Ghana, and in sub-Saharan Africa in general, is a very big problem. The freedom of people to access information directly determines how much data is available to them. However, on the African continent, government websites provide little information, and few countries have passed any laws allowing access to information, including Ghana (Wernikowski, 2012). Without this law, government is allowed to keep information from the public, or to provide that information at a fee, which prevents a large part of the population from gaining access to knowledge (Roberts, 2000). The law supposed to allow access to information, the Freedom of Information Bill, has still not been passed (Sackitey, 2012), so the government is

under no legal obligation to provide information to private individuals. This reticence on the part of the government has many ramifications for the development of Ghana, as the "paper curtain of bureaucracy" (Katz, 1969-1970) remains intact, such that the democratic process and developmental progress is impeded. Without free access to information, our ability as a nation to create knowledge is severely impaired.

Various departments have made strides in addressing this situation. The Ghana Statistical Service (GSS) has the National Data Archive, a searchable web based survey catalogue which allows users to browse, easily retrieve rich metadata and request access to surveys and/or datasets. However, there are only 24 studies in their catalogue, with only 3 of them - Ghana Living Standards Survey, Ghana User Satisfaction Survey and Multiple Cluster Indicator - being between 2011 and 2012, the rest being before then (Ghana Statistical Service, 2012).

A more recent, and better, gauge of practical data availability in the Ghanaian government is the recently activated Open Data Portal^{beta}, by the Ghana Open Data Initiative, which was launched on the 15th of November, 2012. As at December 1st, 2012, there were 101 raw datasets (National Information Technology Agency, 2012) available to anyone who had an interest or a need for such data.

However, having freedom of information laws is not without its problems. Ira Bloom noted that with the freedom of information laws in the digital age, the death knell of informational privacy had sounded. This is because, in the absence of a unified data privacy policy and inadequate security on the databases of government and corporations, there is easy availability of personal information which facilitates murder, kidnapping, stalking and identity theft (Bloom, 2006). "Threats to security no

longer come from spies and moles but from releasing too much information"
(Campbell, 1999)

2.1.2 Infrastructure

As has been stated before, the state of infrastructure in any nation is of vital importance to the data availability that country experiences. As at 2011, 1 in 160 people use the internet in sub-Saharan Africa, out of a population of 874.84 million people (Trading Economics, 2011). In Ghana's instance, infrastructure can be seen as the main constraining factor as a majority of the Ghanaian population (89.99%) are without a means to access information digitally (Schware & Deane, 2003).

Schware and Arsala found as much in their study. They realised that a major reason for the success or failure of e-government initiatives is the extent to which a government addresses the issue of technological infrastructure encouraged by appropriate telecommunications policies. For the successful deployment and sustainability of e-government programmes, ICT infrastructure must be given centre stage.

To achieve effective e-governance, and thus reliable data availability, there is a need to look at some benchmarks. According to the 2012 United Nations E-government survey rankings, the Republic of Korea was the world leader (0.9283), and Seychelles being the top ranked in Africa (score of 0.5192 and the 84th position). To put Ghana's position perspective, here are some statistics, gotten from Nationmaster.com, UN E-government index, the countries' websites and some other sites, as shown in Table 2.

Table 2: Comparisons of South Korea, Seychelles Island and Ghana

	South Korea	Seychelles	Ghana
Population	49,799,000	86,525	24,965,816
GDP per capita (2011)	$30,205.59	$26,420.38	$402.26
HDI (2011)	0.90	0.773	0.52
E-Gov. Development Index (2012)	0.9283	0.5192	0.3159
Percentage of people with Internet access	81.5%	43.6%	10.01%
Presence of FOI legislation	Yes (1998)	Yes (2000)	No
Digital Opportunity Index (2011)	8.56	4.37	2.23
Infrastructure (2012) – part of UN survey	0.8356	0.4037	0.1111

As these figures show, Ghana is way behind in what is needed to make data freely and readily available to the public.

2.2 State of e-government in Ghana

E-government, as a term, has grown in acceptance and desirability, and usually refers to the delivery of public services through the application of advanced information and communication technology (Holmes, 2001).

Many articles and papers have been written assessing the current state of e-governance on the African continent. In reading these articles, some common themes stood out, such as the general poor state of ICT infrastructure in Africa, as was pointed out in the previous section.

Stephen Mutula, in an article for Information Management & Computer Security (2008), performed a comparative assessment of sub-Saharan Africa's e-government status in relation to that of developed and transitional countries. He found that Africa was seriously lagging behind the rest of the world in e-government.

Patrick Ngulube also wrote some seminal articles on e-government in Africa. In a piece called "The Nature and Accessibility of E-Government in Sub Saharan Africa" for the International Review of Information Ethics (2007), he noted how ICTs have changed the process of governing the world. He put forward 3 main drivers of e-government; technological, organizational and environmental. One of the more important aspects of this paper is his emphasis on politics and its impact on the development of e-government in developing countries. He pointed out that some politicians view the ICT revolution as a highly political affair and not a technical challenge.

Asogwa (2011) points out that although a lot of African countries have expressed their willingness to apply ICTs in their public administration, majority were at the emerging and enhanced stages (of the five stages of e-government evolution), and the strength of their web presence continues to diminish the nearer they get to the

benchmark for integrated governance. The widening of the digital divide might be the result of impediments such as the inability to update their websites, high poverty levels, and low levels human capital and knowledge economy, all contributing to a lack of continuity. This concurs with a study done in South Africa by Darch and Underwood on freedom of information laws, state compliance and the discourse of knowledge.

Majority of the other articles followed the same vein, pointing out how low the level of e-government is in Africa. As Moore's Law[1] shows, development in the information world is very rapid. As such, the technological climate at the time these articles were written might be vastly different from today, even if the time differential is only 2 years. With that in mind, the situation in Africa has not changed much in the past decade, with Africa consistently being last in place in the global e-government rankings (United Nations, 2012).

Table 3: Figures were gotten from various organisations ranking e-government initiatives of countries

Rating Agency	Rating	Position
Nationmaster.com (2009)	32 (out of a 100)	153
UN E-Government Survey (2010)	0.2754	147
UN E-Government Survey (2012)	0.3159	145

---

[1] Moore's Law states that the number of transistors on a chip, which determines processor speeds and overall processing power for computers, will double every two years. (Moore's Law Organization, 2012)

Ghana recently implemented e-government projects for eleven government departments and agencies. These agencies include Food and Drugs Board, National Communication Authority, Births and Death Registry, Ministry of Foreign Affairs and Regional Integration, Accra Metropolitan Assembly, Passport Office, National Health Insurance Scheme, National Information Technology Agency, Minerals Commission and Registrar Generals Department (Adekoye, 2012). The e-services being developed are a Content Management System (CMS) for managing hosted content on the government portal, a payment gateway allowing portal applications to receive payments from customers, e-forms and a document management application. Such a system will allow for information to flow between government institutions at a faster rate than before, and will thus lead to a greater degree of data availability

2.3 The role of NITA and ICT4AD

Ernest Wilson III once pointed out that, "If politics is wrong, then the other major drivers of e-government will not work". The leaders of Ghana should be committed to "press changes in the face of institutional rigidity, technological backwardness, and political resistance" (Zakareya, Zahir, & Sarmad, 2004).

The ICT4AD policy was passed in 2003, based on the Policy Framework Document: "An Integrated ICT led Socio-economic Development Policy and Plan Development Framework for Ghana" to represent the Vision for Ghana in the information age. It takes into account the Vision 2020, the Ghana Poverty Reduction Strategy, and the Coordinated Programme for Economic and Social Development of Ghana. It was designed to contribute to addressing key developmental challenges like a poorly performing economy, heavy national debt burden, weak scientific research base and under-developed research and development (R&D) capacity among others. A section

of the policy deals with promoting Electronic Government and Governance, with the objective being:

- To reform the civil and public service to improve on its organizational systems, structures, procedures and processes.

- To address the poor attitudes to work and unproductive and inefficient work ethics which could hinder the effective exploitation of ICTs to improve organizational efficiency service delivery, productivity and reduction in operational cost within the civil and public service

- To improve the efficiency of the civil and public service and ensure that it plays a more positive role in economic and social development at all levels

- To facilitate the establishment of an efficient intra-and inter-departmental, inter-sectorial, national and sub-national system of communication, for the necessary feed-back in policy formulation and programme implementation, monitoring and review

- To modernize the operations of the civil and public service through the deployment of ICTs to facilitate administrative cost reduction and its effectiveness and efficiency in the delivery of its services to the public

- To facilitate the development and implementation of a comprehensive e-government and governance strategy for Ghana.

At the time of its formulation, this policy did not address data availability as this work seeks, but it did provide a springboard for discussions on it to be held. However, between 2003 and 2012, we are yet to see any FOI legislation or compulsory national compliance with information requests, and our ICT infrastructure is still inadequate (Adekoye, 2012)

It is in response to this need for political will to take physical action that NITA was formed to help implement Ghana's IT policies (ICT4AD). Since its formation in 2008, plans for a national data centre have been drawn up and construction has started, and an open government data portal has been set up on the web to provide government data to those who can access the internet, amongst other things.

One of NITA's biggest achievements, at least in terms of data availability, is the e-GIF document. The e-GIF document helps ensure efficiency and transparency in the delivery of basic public services to citizens. The current situation in Ghana is that each MDA has silos of information, but their various systems are unable to talk to each other and share information. The e-GIF document sets the ICT standards, policies and guidelines that all MDAs should use to achieve interoperability, thus improving information sharing amongst MDAs, which as Darch and Underwood is one of major hurdles to data accessibility (2005).

Thus, NITA and ICT4AD together are necessary components to achieving comprehensive data availability for the nation.

2.4 Lessons Learnt

From all the literature studied, three main components for data availability in Ghana can be gleaned

   I.   An ICT friendly infrastructure (landlines, broadband, etc.)
  II.   A freedom of information law
 III.   A culture of compliance

2.5 Conceptual Framework

Synthesis of the research indicates that data availability, e-government and NITA (and the ICT4AD) are interconnected, with each component impacting on, and partly deriving from the others.
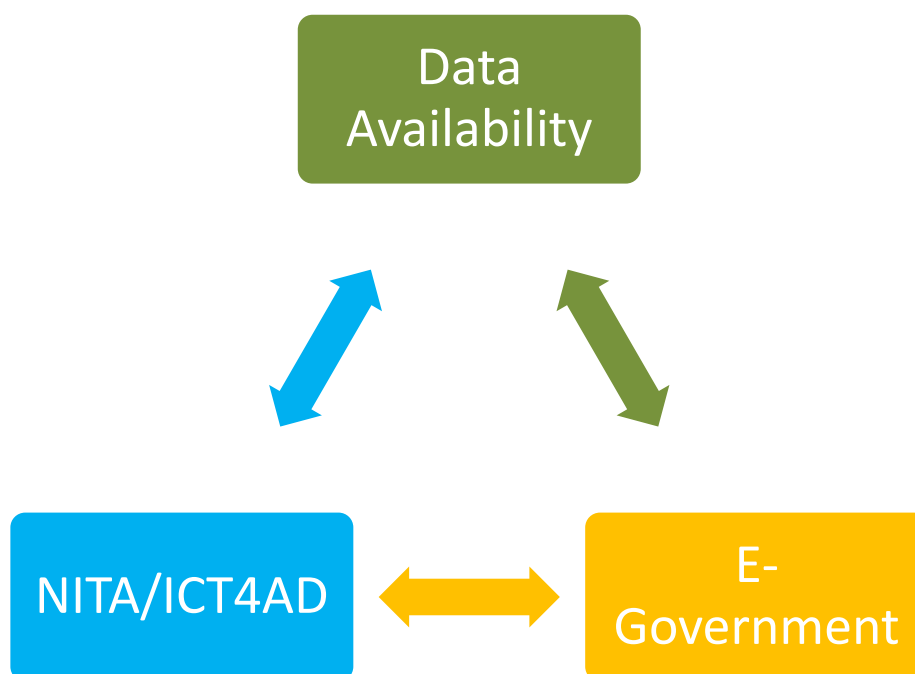
For the purpose of this study, data availability is the degree to which data can be easily accessed, and how (infrastructural enablers) that data can be easily accessed.

E-government refers to both e-government [processes and structures that encompass all forms of electronic interaction between the Government (elected) and the citizen (electorate)] and e-democracy [processes and structures needed to deliver electronic services to the public (citizens and businesses), collaborate with business partners and to conduct electronic transactions within an organisational entity]. For this study we refer to both, as the two generate and transfer information that is of importance to the nation. The essence of this study will be to assess Ghana in the context of data availability, and how it can be enhanced in government institutions. Based on the

literature review this work develops the cognitive map above as the conceptual

framework to guide this research

Chapter 3

Research Methodology

This chapter discusses the tools and methods used for data collection for the purpose of the research study. It covers data sources, criteria for student selection, sample size, administration, and questionnaire structure or design.

3.1 Type and Sources of Data

This research was mostly quantitative in nature. Data collected was principally secondary data with some collated primary data. The quantitative aspect of the research involves e-government rankings and indexes, broken down into their constituent parts to assess Ghana's e-government and data availability levels.

The qualitative nature of the study involves personal interviews with the NITA employees, in a semi-structured format so as to ask an outlined set of questions. This method was applied because it serves as a highly appropriate method for generating and gathering the information necessary for the study's purposes. The respondent is an employee of NITA who can reliably provide the information needed, or if not, can provide directions, and possibly access, to those who can, both inside NITA and out.

Questionnaires were also handed out to students at various tertiary institutions. The questionnaires were set up so as to gauge their perception of data availability in Ghana, and see how data availability amongst government agencies falls short of expectations. Tertiary students were chosen as they do a lot of research as part of their work load, and do not have the experience or contacts in government institutions that older, more experienced researchers have. As such, they rely mainly on data that is available online for their research, as that is the most easily accessible to them.

3.2 Sampling Method

The units of analysis for this study are mainly indices of e-government of Ghana. Supporting data was gotten from NITA employees as well as students. Purposive sampling and convenience sampling, both non-probability techniques, were used in the selection of interviewees. Purposive sampling will be used because vital information is needed from specific people in the field, so those people will be approached to gain that information. The people interviewed represent a specific group or population serving a particular purpose from which the appropriate information can be elicited from.

Convenience sampling is needed to gain subjective information from students at tertiary institutions, and it is a timely and inexpensive means of doing so.

3.3 Selection of Interviewees

In order to ensure that the objectives of the study are satisfied, some specific people will be selected from NITA. The main criterion for selection is willingness to be interviewed, as NITA is still a small agency as yet, so information is not greatly compartmentalized.

3.3.1 Population and Sample Size

In all, at least 3 people are to be selected. Interviews will be conducted with the employees of NITA, as well as whoever they recommend, based on an outlined, but flexible, set of questions. The study makes use of the entire population of NITA, with a selected group for their intimate knowledge of the relevant subject matter. The population and sample size will give a realistic representation of the plans of NITA.

For the questionnaires, the population will be tertiary institutions in the Accra metropolis, which is also the criterion for being selected. A sample size of 60 students in 3 universities will have the questionnaire administered to them to gain their responses. The questionnaires will be distributed equally among the schools. With this method, the students' experiences with collecting data from government sources will be recorded.

Therefore, the data gathered can be analysed to ascertain NITA's future plans, as well as the ease with which government data can be accessed by first time or inexperienced researchers, which helps in satisfying the objectives of the study.

3.4 Data Collection

Data is to be collected through interviews with selected persons, as well as literature on government databases and government ICT policies, and from questionnaires given to students. The semi structured interviews are used to get information from those closest to the information, and questionnaires will be used to get perceptions on data availability from students.

Prior to the interviews, letters of introduction will be sent out to the selected individuals indicating the intentions of the interviewer to hold an interview, relating to the thesis topic. Their conformation to participate will lead to a suitable time being scheduled for the interview. The collated data is then analysed and discussed to arrive at the final results.

The questionnaire is designed to capture the students' personal view of data availability in Ghana. Questionnaires will be handed out to students in universities in the Greater Accra region, for two reasons; a large number of universities are located

here, and constrains on money and time which prevent the author of this research from broadening his study. However, the cosmopolitan nature of the universities here should more than compensate for these constraints.

3.5 Data Analysis

The data collected from the various indices regarding e-government in Ghana is discussed. The analysis focuses on those the rate of data availability in Ghana and the extent to which data on Ghana is able to be accessed online. The general outlook of e-government and its potential will be assessed in relation to some international frameworks and systems. The data gotten from the interviews and questionnaires will also be taken into account for the shortfalls in Ghana now, and suggestions on how to proceed. Conclusions and recommendations based on the analysis and interpretations of the data will be made.

The interviews will be analysed using content analysis, as they are qualitative in nature, and as such, need to be analysed in that manner.

<center>**Chapter 4**</center>

<center>**Summary Analysis and Broad Discussion of Results**</center>

4.1 Data Analysis

The essence of the study is to find out how the Ghanaian government makes information available digitally. The data collected is discussed, showing the shortfalls in the e-government infrastructure and policies. The discussion is based on the interviews with NITA personnel and data gathered from the questionnaires handed out to students, as well as the e-government rankings.

This chapter analyses data received from three main sources. The first is an analysis of information gleaned from e-government ratings of Ghana, which provide a reasonable facsimile of data availability to serve the purposes of this research paper. The second is a study of information provided by NITA personnel, which detail the current situation as well as future government plans. The third source is an examination of questionnaires handed out to tertiary students on data availability and their experience on doing research using data from government sources. It also discusses the ICT4AD policy and its efforts to strengthen the Ghanaian government's presence on the ICT landscape.

4.2 The Situation on the Ground

Over the past decade, ICT and e-government has been one of the primary aims of developing countries, of which Ghana is one. There have been great strides in expanding e-government and increasing data availability, with projects like the National Data Centre.

4.2.1 What the ICT4AD Policy Means for Data Availability

The ICT4AD policy is one of the programmes being used by Ghana's government to achieve development in as short a time as possible. One of its objectives is to "support and strengthen scientific research and research and development within the nation's universities and research institutions as a basis for promoting the development of a globally competitive local ICT sector and industry" (Government of Ghana, 2003)

However, the policy does not explicitly address the need for data availability in facilitating scientific research and R&D. It does, however, recognize the importance of e-governance in improving public service delivery and bringing the government closer to the people. To that end, increasing data availability is an implied objective of the ICT4AD policy. This is due to the fact that for e-government to be effective, an increase in data availability must be a priority for the government.

Nevertheless, the fact remains that ICT usage is still low in Ghana as a developing nation. Ghana has recognized the role of ICT and gradually, it will grow to fit into the lifestyles of the people. But for ICT to yield its best possible results, it must be allowed to fulfil its primary purpose of facilitating the transfer of information between parties.

4.2.2 The Opportunities ICT Presents for Ghanaian Research

The more information any research paper or project has access to, the better able that research is to solve real world problems. A general point gleaned from all (60) the questionnaires is that students lack the access to information that will make their research actually matter to Ghana's development. Thus, the role data availability plays in enhancing the quality of research done by Ghanaians cannot be overlooked.

4.3 Data from E-Government Ranking and Ratings

Information has been gathered from a variety of organisations and web sites that measure governments based on their e-government infrastructure and policies. These organisations include the UN Public Administration Programme, Nationmaster.com, World Data Bank, Waseda University Institute of e-Government and a few others.

One similar metric used among most of these ranking agencies was infrastructure (a measure of the ICT infrastructure capacity), which shows how important it is for the right infrastructure to be present when assessing data availability.

However, despite the large number of ranking agencies, only a few of them include Ghana, and the UN Public Administration Programme is the only one that ranks Ghana over an appreciable period of time for e-government. Thus, it is the only one that provides enough information for meaningful longitudinal analysis over a long period of time to be done.

4.3.1 Web Measure

This measure assesses the level of information and/or ability of certain government websites to provide citizens with services. The Ministries/Departments evaluated are of Health, Education, Social Welfare, Labour and Finance.

Many students do not have access to government data through their websites, and even if they do, the sites are not well designed to make getting that information easy for inexperienced researchers. Despite this, there is improvement in this measure, which shows that the level of information is increasing, although it fell in 2008, as seen in Figure 3 below.
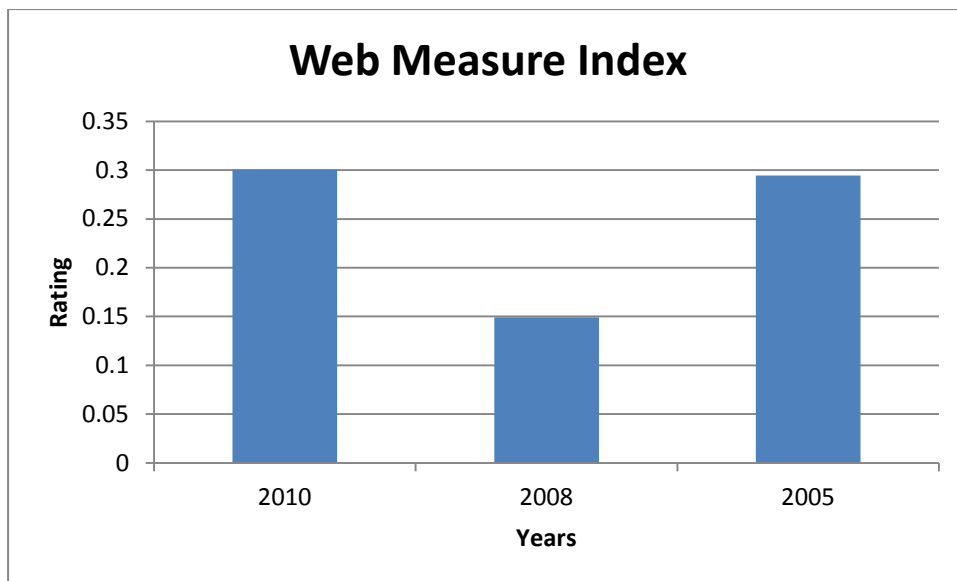
Web Measure Index

Figure 3: A chart showing the changes in web measure index since 2005

4.3.2 Infrastructure

This is a measure of the IT infrastructure in place in a country. It allows measurement of the physical structures in place that allow people to communicate digitally. PC users, mobile phone users and online population are included in this measurement, as are other indices.

This measure shows a positive trend for Ghana, in that between 2005 and 2010, the Ghanaian index on infrastructure went up by 172%. Granted, a mark of 0.111 is still very low in world ranking, and even African ranking (United Nations Public Administration Programme, 2012), but at least there has been substantial progress in that period, and that is a good sign.
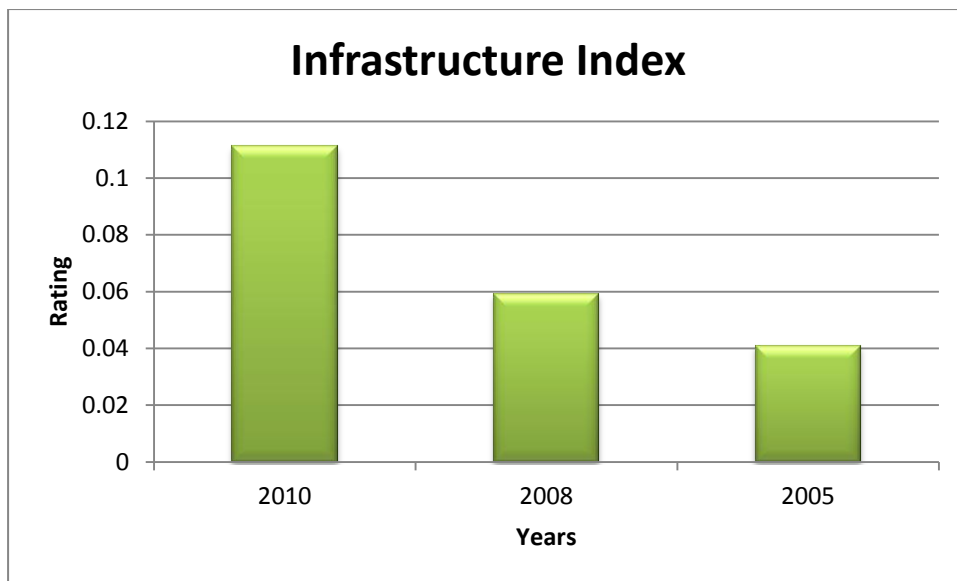
Infrastructure Index

4.3.3 Human Capital

This index is a measure of the populace's ability to utilise ICT for their purposes and is composite of the adult literacy rate and the combined primary, secondary and tertiary gross enrolment ratio, with a two third weight given to adult literacy and a third to gross enrolment ratio.

This index was different from the others, in that in 2008, the score for Ghana was higher than the other years, but it is the reverse in the other indexes. Given that the enrolment ratios for primary, secondary and tertiary institutions increased between 2005 and 2012, and it has a lesser weight in the rating, it would suggest that adult literacy rose in 2008, but fell between then and 2010 to 0.536, even lower than 2005. Possible reasons for this are the redesign of the educational system and the load shedding programme, both of which started in 2008, affecting the quality of and type of education gained in that time.

Human Capital Index

(Bar chart: Y-axis labeled "Rating" ranging from 0.48 to 0.64; X-axis labeled "Years")
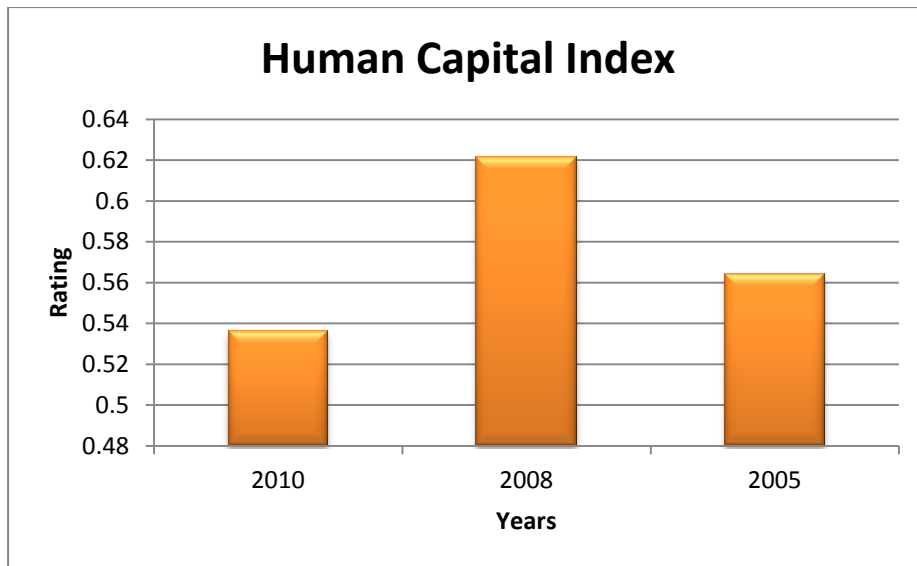
Years	Rating
2010	~0.535
2008	~0.622
2005	~0.565

4.3.4 E-Participation

This measure is the sum total of both the government programs to encourage participation and the willingness of citizens to do so. Thus, it assess the "quality and usefulness of information and services provided by a country for the purpose of engaging its citizens in public policy making through the use of e-government programs" (United Nations Public Administration Programme, 2012). One of its main objectives is to increase e-information to citizens for decision making, and as such, is an important metric in assessing data availability in Ghana.

E-Participation Index

(bar chart with y-axis "Rating" ranging from 0 to 0.25; x-axis "Years" with bars for 2010, 2008, and 2005)
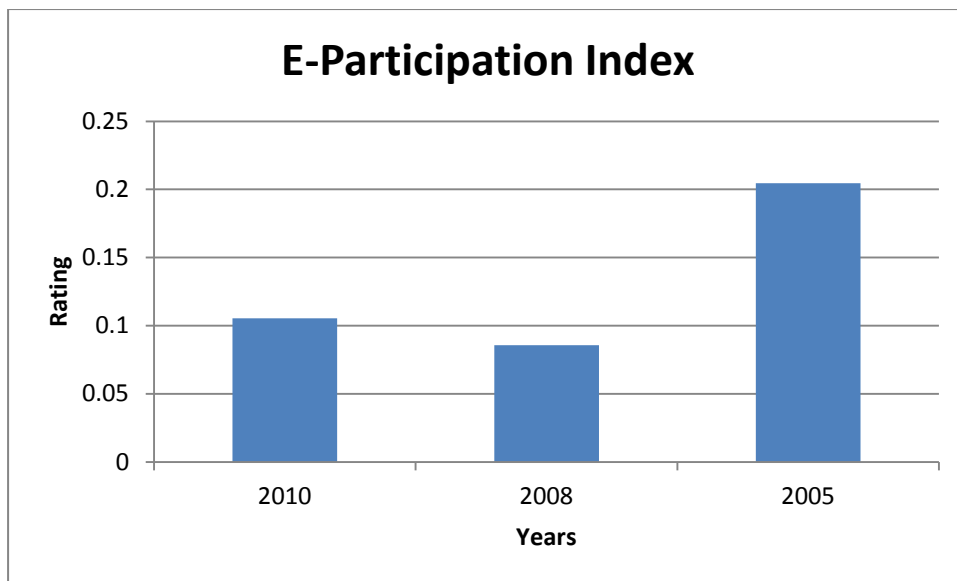
Figure 6: A chart showing the changes in e-participation index since 2005

4.4 Data from Interviews with NITA personnel

Information gathered from personnel in NITA was analysed using the content analysis technique. These are opinions and policies of the government in advancing the e-government agenda, and thus increasing the amount of data available digitally.

From the NITA personnel, it is evident that the government is aware of the shortage of government data that is available online. Various steps are being taken to address this issue, such as the National Data Centre, and the integration of the data systems of government agencies.

According to the measures used by the UN Public Administration Programme, four main factors affect the level of e-governance in a nation. These factors are web measure, infrastructure, human capital, and e-participation. NITA's mandate is primarily concerned with the first one, web measure. And to address it, actions have been taken, such as the Data Centre, the e-GIF document, and the Content Management System, which have been discussed earlier. With all these and more in

place, the Web Measure index for Ghana is likely to increase, and ensure that government websites have a lot more information for researchers to access.

4.5 Data from Questionnaires to Students

Questionnaires were handed out to students in tertiary institutions to get their impressions of data availability in government institutions and record their experiences in getting data for their research. In doing so, a truer picture of data availability is developed, as it shows the relative difficulty or ease of accessing data in the government, as the students are first time or inexperienced researchers.

From a population of around 6,500 students in three universities, questionnaires were given to 60 who were randomly selected. The primary means of data collection amongst this sample size was the internet, through which they got figures, opinions, reports and archive records

When asked, a majority of students indicated that doing research in Ghana using government data was very difficult for them, which was attributed to either a deficit in the data needed or a lack of access to the information. This meant that their research would comprise mainly of primary data, collected by the researchers themselves, and secondary data from other countries.
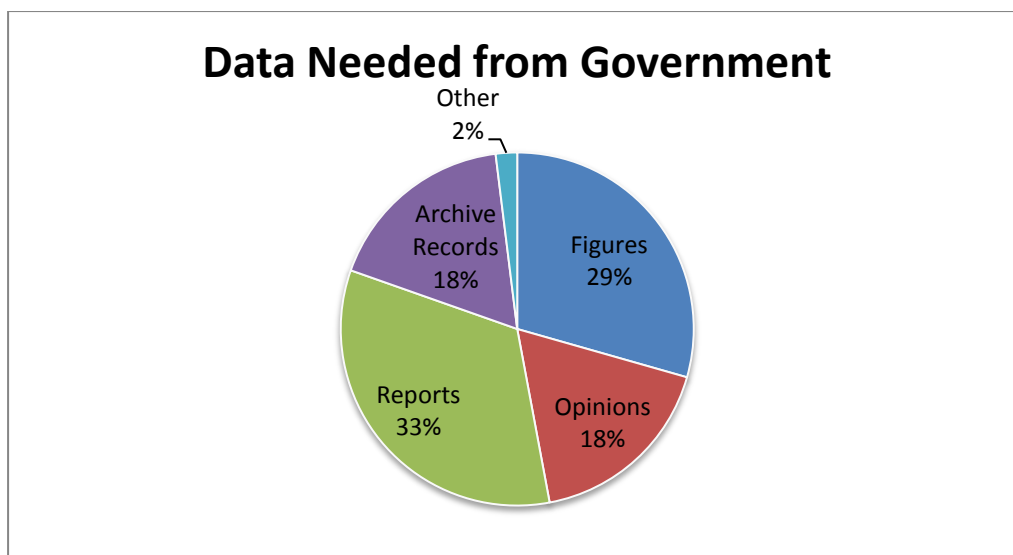
Data Needed from Government

Considering the types of data students needed, as displayed in Figure 7, government websites and databases should easily provide these, with the possible exception of opinions, as they are in a format that the government already uses, and can be easily transmitted over the web if they are in a digital format, as 47% of the time, that's how students get their information, as seen in Figure 8 below.
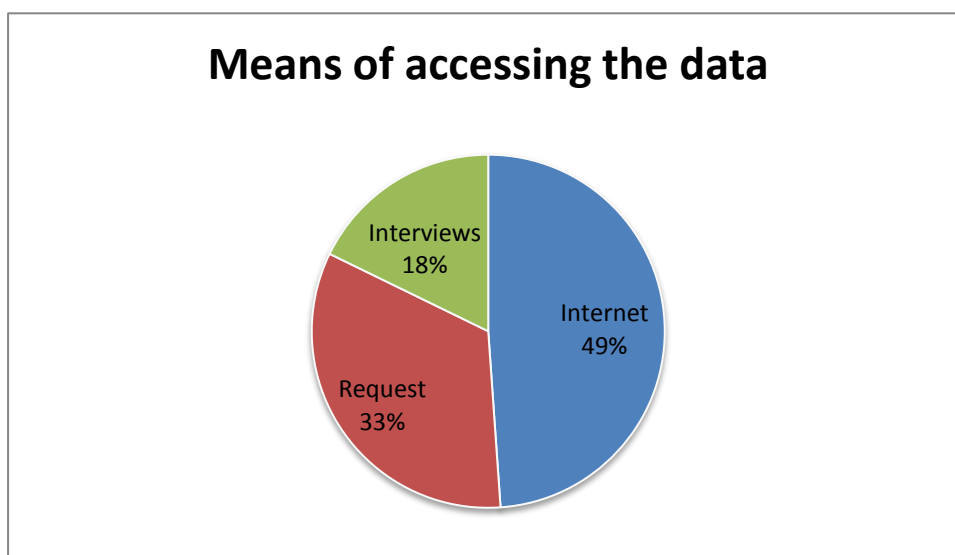
Means of accessing the data

This dearth of data, as stated earlier, has two main causes; a lack of data and an inability to access that data for whatever reason. On the lack of data from government sources, the students and a review of government websites showed that a minimal amount of data was available digitally. Policies, new projects and targets were among the data easily found, but a comprehensive breakdown of figures, facts and metrics are nigh impossible for students to find online.

Related to the want of data is the lack of access to the data if it exists. As the subject under discussion is government data, it is understood that some aspects of government needs to remain secret for government to function, and those areas are not under the purview of this research paper. Outside of those sensitive areas though, there is still a lot of data that would be extremely important to the research of Ghanaian students that is denied them.

As the primary means of accessing the data for research is through the internet, and the amount of data available on government sites is minimal, this would validate the point that among students and inexperienced researchers, the quality of their research is severely limited. And this limitation on research raises the question of how we are going to solve our country's problems, if those who wish to study them are unable to do so?

<center>**Chapter 5**</center>

<center>**Conclusions and Recommendations**</center>

5.1 Findings

In researching the extent of data availability in government institutions in Ghana, the concept of data availability is not a novel one; yet increasing it has not been a governmental priority. This attitude is beginning to change. The IT environment in Ghana, and across the world, is progressing at a fast rate, and it is becoming increasingly obvious that those that do not try and keep up are going to be left behind very soon.

Despite the fast change of pace, Ghana still lacks some of the necessary elements to allow for the free flow of information between the government and the governed.

5.2 Recommendations and Conclusion

Efforts must be directed towards putting in place measures to increase the data available to citizens. This is important because an informed public is essential to democracy. Charles de Montesquieu, a famous French politician and philosopher, once noted that "the tyranny of a prince in an oligarchy is not so dangerous to the public welfare as the apathy of a citizen in a democracy". Thus, one of the greatest safeguards of our democracy would be the dissemination of knowledge to the general populace

5.2.1 Converting Government Records into a Digital Format

In order for data to be easily accessible, a large number of people should be able to access it with the technology and infrastructure available to them. With the large

amount of data the government has that is still in solid form, the amount of people who can access the data is very limited, as only small groups of people can access it at any one time, and gleaning any useful information from the data is a painstaking and laborious process.

With this handicap in mind, it behoves the government to transcribe as much data as they generate into a digital format. This digitisation of information has many merits, above and beyond that of increased availability of data. These include easy analysis of data for information in decision making and easy transferability of data between departments. So it is in the interest of both the government and the general populace for this measure to be implemented.

5.2.2 Increase IT Training

According to the data from the UN, there was a sharp drop between 2008 and 2010 in the Human Capital Index of about 16%. As has already been established, most of this drop can be attributed to adult literacy.

If the country's human capital is decreasing, then increasing data availability becomes a moot point, as the majority of the people will not benefit from this increase in the information accessible to them. So to counter this, NITA can partner with GIFEC, Ministry of Education and other relevant bodies to increase IT training and proficiency in the country. The initiative to give every tertiary student a laptop is a step in the right direction in this regard, even though it is not by NITA.

5.2.3 Freedom of Information Legislation

A primary concern in increasing data availability is the passing of the Freedom of Information Bill. Without a law that requires it, government agencies are under no

obligation to divulge information to the general public, so that knowledge is reserved for the few with the connections and/or money to access it.

The push for this bill to be passed is one that has been going for some time, and the various groups (like the Alliance for Accountable Governance (AFAG)) that want it passed are pushing hard for its signing into law.

However, according to Honourable Cletus Avoka, Majority Leader of Parliament, the passage of the FOI bill is less important and for that matter, not a priority among the various bills that are currently under consideration by the august house of parliament (AFAG Ghana, 2012). With an attitude like this among top politicians, passing the bill is unlikely, considering that top level political leadership, support and commitment to the process is one of the key critical success factors (Dzidonu, 2002) to passing FOI legislation.

With all this in mind, it is necessary for NITA to recommend to government that passing the FOI bill is in its best interests as a democratic institution, and to keep doing so until the bill is passed into law.

References

4ICU. (2012). *Universities in Ghana*. Retrieved from 4 International Colleges and Universities: http://www.4icu.org/gh/ghanaian-universities.htm

Adekoye, S. (2012, February 29). *Ghana embarking on e-government projects*. Retrieved November 5, 2012, from IT News Africa Web site: http://www.itnewsafrica.com/2012/02/ghana-embarking-on-e-government-projects/

AFAG Ghana. (2012, May 17). *Freedom of Information Bill Passage: Inexcusable!* Retrieved May 5, 2013, from http://www.modernghana.com/news/396151/1/freedom-of-information-bill-passage-inexcusable.html

African Studies Center. (2010). *Official and Spoken Languages of African Countries*. Retrieved from African Studies Center, University of Pennsylvania Web site: www.africa.upenn.edu/K-12/menu_EduLANG.html

Aheto, J. M. (2012). *Entrepreneurship, Young People and Ghana's Development: A Case Study of the ICT Sector.* Accra: Ashesi University College.

Alkire, S. (2002). *Valuing Freedoms: Sen's Capability Approach and Poverty Reduction.* Oxford: Oxford University Press.

Anders Chydenius Foundation's Publications 2. (2006). *The World's First Freedom of Information Act.* (J. Mustonen, Ed.) Kokkola, Finland: Anders Chydenius Foundation.

Appiah, I. S. (2012, June 16). *Freedom of Information Bill Will Foster Relationship Between Government and Citizenry*. Retrieved November 21, 2012, from GhanaWeb: http://www.ghanaweb.com/GhanaHomePage/NewsArchive/artikel.php?ID=242152

Asogwa, B. E. (2011, October). The state of e-government readiness in Africa: A comparative web assessment of selected African countries. *Journal of Internet and Information System*, 43-57.

Avgerou, C. (2003). The Link between ICT and Economic Growth in the Discourse of Development. In M. Korpela, M. R., & P. A. (Eds.), *Organizational Information Systems in the Context of Globalization* (pp. 373-387). Dordrecht: Kluwer Academic Publishers.

Backus, M. (2001). *E-Governance and Developing Countries: Introduction and Examples.* International Institute for Communication and Development. International Institute for Communication and Development (IICD).

Backus, M. (n.d.). E-Governance and Developing Countries: Introduction and Examples.

Banisar, D. (2004). *Freedom of Information and Access To Government Record Laws Around the World.* Global Survey, Freedominfo Organisation.

Banisar, D. (2006, September 20). Freedom of Information Around the World 2006: A Global Survey of Access to Government Information Laws. *Privacy International*, p. 168.

Bloom, I. (2006). Freedom of Information Laws in the Digital Age: The Death Knell of Informational Privacy. *Richmond Journal of Law & Technology, 12*(3).

Bouguettaya, A., Ouzzani, M., Medjahed, B., & Cameron, J. (2001). Managing Government Databases. *IEEE*, 56-64.

Campbell, D. (1999, March 18). You've got mail (and so have we). *Guardian*, pp. Online Supplement, 2-7.

Cate, F. H., Fields, D. A., & McBain, J. K. (1994). *The Right to Privacy and the Public's Right to Know: The "Central Purpose" of the Freedom of Information Act.* Bloomington: Faculty Publications.

Chapple, M. (2012). *What is a Database?* Retrieved September 2012, 2012, from About.com: databases.about.com/od/specificproducts/a/whatisadatabase.htm

Commerce Ghana. (2012). *Internet Capacities*. Retrieved November 13, 2012, from Commerce Ghana: http://www.commerceghana.com/guidance/internet-usage-in-ghana

Coronel, S. S. (2012, October 30). *Measuring Openness: A survey of transparency ratings and the prospects for a global index*. Retrieved November 19, 2012, from Freedominfo Organisation: Measuring Openness: A survey of transparency ratings and the prospects for a global index

Daily Graphic. (2012, May 16). *Ghana Ranked 7th Best Performing Government In Africa.* Retrieved from Modern Ghana Web site: http://www.modernghana.com/news/395862/1/ghana-ranked-7th-best-performing-government-in-afr.html

Darch, C., & Underwood, P. G. (2005). Freedom of information legislation, state compliance and the discourse of knowledge: The South African experience. *The International Information & Library Review*, 77-86.

Dogbevi, E. K. (2012, October 15). *Ghana ranks 7th on 2012 Ibrahim Index of African Governance*. Retrieved from Ghana Business News Web site: http://www.ghanabusinessnews.com/2012/10/15/ghana-ranks-7th-on-2012-ibrahim-index-of-african-governance/

Dogbevi, E. K. (2012, September 4). *Internet users in Ghana reach 14.11% of population in 2011 - ITU*. Retrieved from Ghana Business News Web site: http://www.ghanabusinessnews.com/2012/09/04/internet-users-in-ghana-reach-14-11-of-population-in-2011-itu/

Dsane, S. (2013, February 2013). Ageing and Statistics in Ghana. *Daily Graphic*, p. 7.

Dzidonu, C. (2002). *A Blueprint for Developing National ICT Policy in Africa.* Nairobi: African Technology Policy Studies Network.

Easterly, W. (2001). *The Elusive Quest for Growth.*

Economic Commission for Africa. (2007). *National Information and Communication Infrastructure (NICI) e-Strategies: Best Practices and Lessons.* Economic Commission for Africa, National Information and Communication Infrastructure. Addis Ababa: Economic Commission for Africa.

Eschenfelder, K. R., & Miller, C. A. (2007). Examining the role of web site information in facilitating different citizen-government relationships: a case sudy of stte chronic wasting disease web sites. *Government Information Quarterly*, pp. 64-88.

Fayyad, U., Piatetsky-Shapiro, G., & Smyth, P. (1996). From Data Mining to Knowledge Discovery in Databases. *AI Magazine*, 37-54.

Ghana Statistical Service. (2012). *Data Catalogue*. Retrieved November 21, 2012, from National Data Archive: http://www.statsghana.gov.gh/nada/index.php/catalog

Gichoya, D. (2005). Factors Affecting the Successful Implementation of ICT Projects in Government. *The Electronic Journal of e-Government, 3*(4), 175-184.

GNA. (2012, September 4). *Ghana Ranks 103rd in the Global Competitive Index*. Retrieved from Ghana Cedi Web site: http://ghanacedi.com/Business-in-Ghana/ghana-ranks-103rd-in-the-global-competitive-index.html

GNA. (2012, October 23). *Ghana says open government data portal ready by December 2013*. Retrieved November 27, 2012, from Ghana Business News: http://www.ghanabusinessnews.com/2012/10/23/ghana-says-open-government-data-portal-ready-by-december-2013/

GNA. (2012, March 16). *Internet penetration grew by 10 per cent last year*. Retrieved November 27, 2012, from GhanaWeb: http://www.ghanaweb.com/GhanaHomePage/business/artikel.php?ID=232902

Government of Ghana. (2003). *The Ghana ICT for Accelerated Development (ICT4AD) Policy.* Accra: The Government of Ghana.

Government of Rwanda. (2000). *AN INTEGRATED SOCIO-ECONOMIC AND ICT POLICY AND STRATEGIES FOR ACCELERATED DEVELOPMENT*. Retrieved October 8, 2012, from UNECA Web site: http://www.uneca.org/aisi/nici/country_profiles/rwanda/rwanpap3.htm

Griliches, Z. (1998). Issues in Assessing the Contribution of Research and Development to Productivity Growth. In Z. Griliches, *R&D and Productivity: The Econometric Evidence* (pp. 17 - 45). Chicago: University of Chicago Press.

Hambuba, C., & Kagoiya, R. (2009). *Freedom of Information (FOI) & Women's Rights in Africa.* Nairobi: FEMNET.

Heeks, R. (2000). *Government Data: Understanding the Barriers to Citizen Access and Use.* University of Manchester. Manchester: Institute for Development Policy and Management.

Heeks, R., & Bailur, S. (2006). *Analysing eGovernment Research: Perspectives, Philosophies, Theories, Methods and Practice.* Manchester City: Development Informatics Group; Institute for Development Policy and Management.

Henten, A., Falch, M., & Anyimadu, A. (2004). Telecommunications Development in Africa: Filling the Gap. *Telematics and Informatics*, 1-9.

Holmes, D. (2001). *E-gov: Ebusiness Strategies for Government.* London: Nicholas Brealey.

III, E. W. (2004). *The information revolution and developing countries.* Boston: Massachusets Institute of Technology.

International Records Management Trust. (2004, December). The E-Records Readiness Tool. Richmond, Surrey. Retrieved November 28, 2012, from http://www.nationalarchives.gov.uk/rmcas/downloads.asp#additionaltools

Katz, J. M. (1969-1970). *Games Bureaucrats Play: Hide and Seek under the Freedom of Information Act.* Washington D.C.: Centre for the Study of Responsive Law.

Keita, M. (2010, February). *Freedom of information laws struggle to take hold in Africa*. Retrieved November 21, 2012, from Committee to Protect Journalists: http://www.cpj.org/blog/2010/02/freedom-of-information-laws-struggle-to-take-hold.php

Kessler, K., Hettich, N., Parsons, C., Richardson, C., & Triana, A. (2011). *A Framework for Assessing Privacy Readiness of e-Government.* Manchester: Centre for Development Informatics; Institute for Development Policy and Management, SED.

Kolsaker, A., & Lee-Kelley, L. (2008). Citizens' attitudes towards e-government and e-governance: a UK study. *International Journal of Public Sector Management*, 723-738.

Lawson, T. (2012, October 22). Your E-business will fail because of Poor Data Stewardship. *Business and Financial Times*, p. 5.

Lessa, L., Negash, S., & Belachew, M. (2012). *Steering e-Government Projects from Failure to Success: Using Design-Reality Gap Analysis as a Mid-Implementation Assessment Tool.* Institute for Development Policy and Management, SED, Centre for Development Informatics. Manchester: Centre for Development Informatics.

lpalmer. (2006, July 5). *Ghana ICT4D National Policy*. Retrieved November 26, 2012, from Comminit: http://www.comminit.com/africa/content/ghana-ict4d-national-policy

Madon, S. (2004). Evaluating the Development Impact of E-Government Initiatives: An Exploratory Framework. *The Electronic Journal on Information Systems in Developing Countries*, 1-13.

Mo Ibrahim Foundation. (2012). *The Ibrahim Index of African Governance (IIAG)*. Retrieved from Mo Ibrahim Foundation Web site: http://www.moibrahimfoundation.org/IIAG/

Moore's Law Organization. (2012). *Moore's Law*. Retrieved from Moore's Law Organization Web site: www.mooreslaw.org/

Mutula, S. M. (2008). Comparison of sub-Saharan Africa's e-government status with developed and transitional nations. *Information Management & Computer Security, 16*(3), 235 - 250.

National Information Technology Agency. (2010). *NITA*. Retrieved September 29, 2012, from NITA Web site: www.nita.gov.gh/home.aspx

National Information Technology Agency. (2012, November 15). *Ghana Open Data Initiative Home*. Retrieved from Ghana Open Data Initiative: http://data.gov.gh/

Nations Online. (2012). *Official and Spoken Languages of African Countries*. Retrieved from Nations Online Web site: www.nationsonline.org/oneworld/african_languages.html

Ngulube, P. (2007, September). The Nature and Accessibility of E-Government in Sub Saharan Africa. *International Review of Information Ethics*, pp. 1-13.

Opare, E. A. (2012, November 19). Ghana Open Data Portal Launched!! Accra, Greater Accra, Ghana. Retrieved from https://ash-svr02.ashesi.edu.gh/owa/?ae=Item&t=IPM.Note&id=RgAAAACG5ZyPnwy0TYmw9pH gmhsFBwB0S6%2f8Xm23RqnsrxmJRsvzAAAAAuXcAAB0S6%2f8Xm23RqnsrxmJRsvzA MfaZVBcAAAJ

PC Magazine. (2012). *Data Availability*. Retrieved November 20, 2012, from PC Magazine: http://www.pcmag.com/encyclopedia_term/0,1237,t=data+availability&i=40739,00. asp

Piateski, G., & Frawley, W. (1991). *Knowledge Discovery in Databases.* Cambridge: MIT Press.

Right 2 Info Organisation. (2011, August 18). *Constitutional Protections of the Right to Information*. Retrieved from Right 2 Information Web site: www.right2info.org/constitutional-protections-of-the-right-to

Roberts, A. S. (2000, July/August). Less Government, More Secrecy: Reinvention and the Weakening of Freedom of Information Law. *Alasdair S. Roberts, 60*(4), pp. 308-320.

Rotberg, R. (2007). The Ibrahim Index on African Governance: how we achieved our rankings. *African Business*, 20.

Sackitey, F. L. (2012, May 12). *In Ghana the government drags its feet in passing freedom of information bill*. Retrieved from News Time Africa: http://www.newstimeafrica.com/archives/25848

Schware, R., & Deane, A. (2003). Deploying e-government programs: the strategic importance of "I" before "E". *info, 5*(4), 10-19.

Snyder, B. (2012, September 28). *Happy Birthday Google! Thank You for Changing the World*. Retrieved October 4, 2012, from CIO: http://blogs.cio.com/google/17443/happy-birthday-google-thank-you-changing-world

The Daily Graphic. (2011, May 12). *Factor Local Content In National ICT Policy*. Retrieved November 23, 2012, from Ghana Government Website: http://www.ghana.gov.gh/index.php?option=com_content&view=article&catid=96:top-headlines&id=5859:factor-local-content-in-national-ict-policy-

Trading Economics. (2011). *Population; total in Sub Saharan Africa*. Retrieved from Trading Economics Website: http://www.tradingeconomics.com/sub-saharan-africa/population-total-wb-data.html

UNDP/PIWA. (2009). *E-governance and Citizen Participation in West Africa: Challenges and Opportunities.* United Nations Development Programme/Panos Institute West Africa.

United Nations. (2012). *United Nations E-Government Survey.* United Nations, Department of Economic and Social Affairs. New York: United Nations.

United Nations African Commission for Africa. (2010). *The Plan Development Framework - The SUNRISE Model for Development and Implementation of NICI Plans.* Malawi: UNECA.

United Nations Public Administration Programme. (2012, February 29). *Country Data Review*. Retrieved November 20, 2012, from UNPAN: http://www2.unpan.org/egovkb/datacenter/CountryView.aspx

United Nations Public Administration Programme. (2012). *E-Participation*. Retrieved April 01, 2013, from http://unpan3.un.org/egovkb/egovernment_overview/eparticipation.htm

Wernikowski, N. (2012, July 12). *Slow and unsteady: Ghana's Freedom of Information Bill*. Retrieved November 21, 2012, from Journalists for Human Rights: http://www.jhr.ca/blog/2012/07/slow-and-unsteady-ghanas-freedom-to-information-bill/

West, D. M. (2006). *Global E-Government.* Report, Brown University, Center for Public Policy, Providence.

World Data Bank. (2012). *World Development Indicators*. Retrieved April 5, 2013, from http://databank.worldbank.org/data/views/reports/tableview.aspx#

Zakareya, E., Zahir, I., & Sarmad, A. S. (2004). Factors influencing adoption of e-government in the public sector. *European and Mediterranean Conference on Information Systems.* Tunis: European and Mediterranean Conference on Information Systems.

<u>**Appendix**</u>

<u>**Data Collection Instruments**</u>

1. **Questionnaire**

   This is a questionnaire from a student at Ashesi University College seeking your views on doing research in Ghana, for a thesis paper on data availability in Ghana's government. All information provided will be
   <u>**USED SOLELY FOR ACADEMIC PURPOSES**</u>

   1. Are you a university student? Yes ☐   No ☐
   2. What level are you in? _____
   3. Have you ever done research? Yes ☐   No ☐
   4. Did your research include the use of data? Yes ☐   No ☐
   5. How did you get your data? (Please circle the ones that apply)
       a. Internet
       b. Questionnaires
       c. Journals
       d. Interviews
       e. Other …………………………………………………………………………
   6. Have you ever needed data from a government entity, like a Ministry? Yes ☐   No ☐
   7. What kind of data did you need? (Please circle the ones that apply)
       a. Figures
       b. Opinions
       c. Reports
       d. Records from archives
       e. Other …………………………………………………………………………
   8. How did you access that data? (Please circle the ones that apply)
       a. Internet
       b. Request at their office
       c. Interviews
       d. Other …………………………………………………………………………
   9. On average, how many times a year do you need to access government data? (Please circle only one)
       a. Once
       b. Irregularly (2 – 5 times a year)
       c. Regularly (6 – 12 times a year)

      d.   Often (13 – 19 times a year)

      e.   Very often (at least 20 times a year)

10. How easy was it getting the data from government?

      a.   Very difficult (1)

      b.   Difficult (2)

      c.   Ok (3)

      d.   Easy (4)

      e.   Very easy (5)

11. Were you ever required to pay a bribe to gain information? Yes ☐   No ☐

12. Have you ever had to resort to data from other countries, because you could not find the necessary data on Ghana?

    Yes ☐   No ☐

13. Have you ever accessed information from a government agency using a mobile device (e.g. mobile phone or tablet)? Yes ☐   No ☐

14. If no, why?

      a.   Never thought if it

      b.   Unable to view government sites on mobile device

      c.   Never needed to access the data on a mobile device

      d.   Other …………………………………………………………………………

15. How helpful was the data you got?

      a.   Not helpful at all (1)

      b.   A little helpful (2)

      c.   Moderately helpful (3)

      d.   Very helpful (4)

      e.   Very easy (5)

16. Was the format in which the data was received helpful to your research? (i.e. the way it was presented)

    Yes ☐   No ☐

17. Would you ever use a mobile device to access data from a government agency?

    Yes ☐   ☐ No

2. Interview Questions

1. How is NITA going to integrate government databases, as per Component 3 of your objectives?

2. How effective can NITA be in integrating government databases?

3. How will NITA go about data cleaning for the integrated databases?

4. How will the methods for data access be uniform and well-defined?

5. How will the databases be secured?

6. What is the scope of NITA in reference to GIFEC?

-access to government databases

-government database integration

7. Does NITA have enough resources and government support to carry out its job?

Or are they doing what they can with what they have?

8. Whose initiative is the Open Data Portal?

9. How is NITA going to increase data availability, both in terms of making more

data available and granting access to that data?

GLOSSARY

DATA – refers to raw information that has to be processed to be useful

DATA AVAILABILITY – the extent to which data can be instantly accessed

E-GOVERNMENT - the delivery of public services through the application of advanced information and communication technology

INFORMATION – refers to processed information that is able to serve a purpose

INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) – comprises of all technologies critical for the manipulation and communication of information.

INFORMATION AND COMMUNICATION TECHNOLOGY FOR ACCELERATED DEVELOPMENT (ICT4AD) – a government policy which aims to emphasize on an ICT driven socio-economic plan that is capable of turning Ghana into an information based society. The objectives of this policy include the facilitation of the development and implementation of a comprehensive e-government and governance strategy in Ghana.

INFRASTRUCTURE – the basic physical and organizational structures needed for the operation of the society.

METHODOLOGY – a system of methods used to undertake a study or activity to achieve the best results possible.

NATIONAL INFORMATION TECHNOLOGY AGENCY (NITA) – a government institution set up to further the ICT and e-government agenda of the government.

POLICY – a plan or course of action of any entity that is intended to influence and determine the decisions and other matters to be considered in relation to a particular purpose.

PRIMARY DATA – raw data gathered by the researchers to be analysed.

SECONDARY DATA – existing data gathered by other researchers and used in the research