AN INFORMATION SYSTEM PLANNING FRAMEWORK FOR E-GOVERNANCE IN BANGLADESH

BY

MOHAMMED MOZAMMEL HOQUE

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Name of candidate: Mohammed Mozammel Hoque        (I.C/Passport No: R0240688)

Registration/Matric No: WGA060098

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ABSTRACT

Government of Bangladesh has declared ICT as one of the thrust sector. Realizing the importance of ICT, a comprehensive national ICT Policy has been formulated in 2002 that gives due importance to the issue of e-Governance, declaring that “The government shall use ICT systems within the public administration to improve efficiency, reduce wastage of resources, enhance planning and raise the quality of services.” In 2003, the government launched the Support to ICT Task Force (SICT) under the Ministry of Planning, Government of Bangladesh which is in charge of planning and implementing various ICT projects, particularly eGovernance.

Even though, Bangladesh as a developing country is facing vast challenges while implementing eGovernance. Political, social, economical, technological aspects are the sectors where government is facing most troubles. Moreover, accountability, transparency, decentralization, administrative reformation and satisfaction of public service by its clients are key problem areas in the present governance system of Bangladesh. This research demonstrated a proper Information System Planning for eGovernance of Bangladesh which is long expected in Bangladesh government.

This research provide a competitive intelligence methodology for information system planning which emphasis on analyzing, designing, and developing open and flexible information system architectures for eGovernance that can be used to meet information need or can be upgraded to future information needs.
This research followed on quantitative research methods, quantitative research techniques, and modes of analyzing and interpreting quantitative data that emphasise on describing, understanding the Information System Planning framework for eGovernance in Bangladesh. Data was analyzed in this research by survey and interviews to SICT (Support to ICT Task Force, under the Ministry of Planning, Government of Bangladesh).

In addition, in this research demonstrated a conceptual eGovernance framework based on survey, interviews data and previous research which addressed the applications, infrastructure, information security and privacy and enabling environment issues for an effective eGovernance in Bangladesh.

Moreover, in this research developed a prototype design of single unified eGovernance web portal to support the research objective. This prototype can be used as a guide to develop a fully integrated eGovernance web portal in future.

Furthermore, in this research illustrated a Road Map of ICT strategy to re-invention of eGovernance of Bangladesh which articulates the government’s vision, targets, technical approach and standards for eGovernance systems.
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CHAPTER 1
INTRODUCTION

1.1 Introduction

In most countries, the government is the largest user of computers and related technology with the objective of enhancing public service delivery through Information System/Technology (Report of Planning Commission, Government of Bangladesh, 2007). Encouraging the diffusion of ICT within public sector services is the fundamental to supporting the social and developmental goals of a country. E-Governance is the Information and Communication Technology (ICT) enabled system of government service delivery for achieving good governance. For the impact of globalization, more and more governments at different level around the world are increasingly using information and communication technology, especially Internet and web-based applications, to provide services between government agencies and citizens, businesses, employees and not-for-profit sector to improve efficiency, reduce wastage of resources, enhance planning and raise the quality of services (Zhenyu, 2007 and Dobrica, 2006 ). According to Zahir et al. (2007) many ICT projects initiated by government fail because they are poorly coordinated and lack of well planning. Therefore, government should implement a proper information system planning for eGovernance to promote more efficient and effective governance.

Realizing the importance of eGovernance, Bangladesh government has initiated many ICT projects. Even though, Bangladesh as a developing country is facing vast challenges while
implementing eGovernance. Political, social, economical, technological aspects are the sectors where government is facing most troubles. Moreover, accountability, transparency, decentralization, administrative reformation and satisfaction of public service by its clients are key problem areas in the present governance system of Bangladesh as well as most of the developing countries (Mahbubul, 2007 and Danish 2006). Proper Information System Planning for government sector and exploring the potential role of IT sector can bring about a radical change to improve this situation. In this aspect this is the time to analyze the Information System planning for eGovernance and provide support for formulating eGovernance strategies through an academic research. This research mainly focuses on information system planning framework for eGovernance as well as on the scope and challenges along with recommendations, on how to implement eGovernance successfully in Bangladesh.

1.2 Background of the Study

In the realm of government, ICT applications are promising to enhance the delivery of public goods and services to citizens not only by improving the process and management of government, but also by redefining the traditional concepts of citizenship and democracy. Bangladesh faces a variety of governance challenges including corruption, public administrative malaise, and lack of adequate transparency and accountability in the exercise of public decision-making powers and the delivery of public services. A proper Information System Planning framework for eGovernance can bring a significant change to achieving good governance. ISP (Information System Planning) which is assessing the information needs of an organization and defining the systems, databases and technologies that best
satisfy those needs, is the first step before information system development (John and Joe, 2002).

One of the most recent inspiring news is that government’s action plan in formulating strategy for ensuring good governance through Information and Communication Technologies (ICT) which have a valuable potential to help meet up good governance goals of the country. Bangladesh is ideally stepping into building information society and going for introducing electronic governance which offers an opportunity for governments to get closer to the citizen and to build up a partnership with diverse communities of interest, practice, expertise, conviction, and inter-dependence. Benefiting from other countries’ ICT experiences, understanding their success and failures, adapting that knowledge to the characteristics of one’s socio-economic environment will be vital to the future of eGovernance in Bangladesh.

1.3 Problem Statement

Bangladesh, as an under developed country is facing vast challenges while implementing e-Governance. Political, social, economical, technological aspects are the sectors where government is facing most troubles. In Bangladesh, introducing ICT in the governance mechanism faces the challenge of ensuring equitable access to e-Governance services by all strata of the society. Government is gaining some unsatisfactory progress by initiating some programs. Where developed countries have implemented paperless work, on the other hand most of the developing countries, Particularly Bangladesh are still thinking of implementing some projects. It is all right at the initial stage but cannot be the vision. The vision of a country should be very high.
To fulfill the vision government should take a proper information system planning in terms of eGovernance to promote good governance at right now. Government will have to look to the challenges that they are going to face to implement of eGovernance in currently and in near future.

1.4 Research Objectives

The general aim of this research is to provide a proper information system planning framework for eGovernance to promote more efficient and effective governance, facilitate more accessible government services, and allow greater public access information. Moreover, in this research described the recommendations and identified specific road map of ICT strategies for further proliferation of Information System Planning of eGovernance in Bangladesh. Overall this research targets the following objectives:

1. To study the current status of eGovernance in Bangladesh
2. To identify the issues of eGovernance in Bangladesh.
3. To propose a developmental framework of eGovernance.
4. To develop a prototype of single unified eGovernance portal for information access to citizen based on the proposed framework.

1.5 Research Questions

In this research, Information System Planning identifies to support an effective eGovernance and allow greater public access information. There are wrong conceptualization in understanding of eGovernance, majority understands of eGovernance
is electronic delivery of government services to the people whereas the potential for eGovernance is beyond electronic delivery of government services to the people. In this research the topic is entitled as “An Information System Planning Framework for eGovernance in Bangladesh.” Mainly this research identifies provide a proper information system planning for eGovernance to interact the public society with the aim of promotes transparency, responsiveness, effectiveness, efficiency, and accountability in process of government activities. To achieve the research objectives, the following research questions have arisen:

1. What areas are covered by the Bangladesh government, in terms of e-Governance? (Support the Research objective: 1)

2. What solutions that can be adopted for e-governance in Bangladesh? (Support the Research objective: 2)

3. Which development framework can be adopted for an effective e-Governance? (Support the Research objective: 3)

4. How to develop the prototype of e-governance portal for information access to citizen? (Support the Research Objective: 4)

1.6 Significance of the Research

Most government nowadays are facing the issue of public management modernization and reformation such as globalization, changing society and increasing public expectation (INTAN 2007). Thus, reformation process must continue in government operations and this is covered by usage of proper and effective e-Governance planning. E-Governance can help build trust by enabling citizen engagement is policy process, promotion open and accountable government and helping prevent corruption. Furthermore, the use of ICT
encourages citizens to think constructively about public issues and assessing the impact of applying technology to open the policy process. Some tangible benefits of this research can be briefly discussed as follows:

- **Improve Efficiency and Effectiveness of Governance:** A proper Information System Planning for eGovernance facilitates in making the government’s internal process more efficient, thus saving time and resources in the long run.

- **Increase Transparency and Accountability:** E-Governance helps to increase the transparency of decision-making processes makes the government more accountable to citizens more efficient governance. In many cases eGovernment offers opportunities for citizens to directly participate in decision-making, by allowing them to provide their own ideas and suggestions in forums and on-line communities.

- **Ensure Convenient Access of Government Services and Information to Citizen:** The ultimate goal of the e-Governance is to be able to offer an increased portfolio of public services to citizens in an efficient and cost effective manner. The efficiency comes through a good alignment of efficient internal government processes with the points of truth (interfaces) with citizens. From the user’s perspective e-Governance should enable citizen to enhance closer citizen engagement with government on a vast range of matters. An effective e-Governance enables the government to respond more efficiently and quickly to citizen demands and request.
• **Allows learning from the Past:** Since the eGovernance allows data to be stored and retrieved easily, experiences and statistics from the past projects can be easily used for new similar projects. Moreover, digital storage of data and software applications allow greater scope of integration of activities of different government offices as data can be shared easily and efficiently.

1.7 Research Approach and Methodology

This research followed on quantitative research methods, quantitative research techniques, and modes of analyzing and interpreting quantitative data that emphasis on describing, understanding the Information System Planning for eGovernance in Bangladesh.

The research process starts with the identification of the research topic whereby a lot of study has been carried out to obtain enough information on the topic. A literature review was carried out to study of Information System Planning issues of eGovernance. The literature also looks into the current status of eGovernance of Bangladesh in as well as differences eGovernance strategies with other countries such as Malaysia, India, Singapore and Canada.

After literature review, interviews and survey were carried out for data collection. Interview was conducted to SICT (Support to ICT Task Force Project), under the Ministry of Planning, Government of Bangladesh which is responsible to implement e-government project in Bangladesh. Survey questionnaire were distributed to government agencies employees as well as to different kind of the public to acquire public awareness on e-governance issues by Bangladesh Government. In particular, information for this research
was obtained mainly from journals, articles, books, reports, government publications and
long list of web sites.

1.8 Publications

International Conference:


1.9 Definition of Terms

Before providing any strategic perspective, it is important that there is a clear understanding of the distinction between the terms of Information, Information Systems, Information Technology (IS/IT), Information System Planning and e-Governance. While IS/IT terms are often used interchangeably, it is important to differentiate between the two terms. It should be remembered that information systems existed in organizations long before the advent of information technology and, even today, there are still many information systems present in organizations with technology nowhere in sight (John and Joe, 2002).
**Information** is conveyed by message and has meaning. Meaning always depends on the perspective of the person who receives a message. We are surrounded by a vast mass of potential Information but only some of this ever comes to our attention, and only some of that is actually meaningful in our present context. Information becomes knowledge, by being structured into more complex meaning related by a context (Simon et al., 2006). Another a useful definition of Information for the purpose of Information System is the following.

**Information** is data that has been processed into a form that is meaningful to the recipient and is of real or perceived value in current or prospective actions or decisions (Gordon, and Margrethe, 1985).

**Information system and Information technology:** Information Technology (IT) refers specifically to technology, essentially hardware, software and telecommunications networks. IT facilitates the acquisition, processing, storing, delivery and sharing of information and other digital content. In the European Union, the term Information and Communication Technologies or ICT is generally used instead of IT to recognize the convergence of traditional information technology and telecommunications, which were once seen as distinct areas (John and Joe, 2002).

**Information System,** The UK Academy of Information Systems (UKAINS) defines information systems as the means by which people and organizations, utilizing technology, gather, process, store, and use and disseminates information. It is thus concerned with the purposeful utilization of information technology. The domain of study of IS, as defined by the UKAIS, involves the study of theories and practices related to the social and
technological phenomena, which determine the development, use and effects of information systems in organizations and society (John and Joe, 2002).

**Information System Planning (ISP)** is a disciplined, systematic approach to determining the most effective and efficient means of satisfying or assessing the Information needs of an organization and defining the system, database and technologies that best satisfy those needs (John and Joe, 2002). It’s provides:

- Giving an overall picture of the enterprise and acting as a communication and planning tool.
- Recognizing crucial changes to enable the enterprise to meet its objectives.
- Identifying innovations opportunities for the benefit of the enterprise.
- Identifying IS/IT application to realize the enterprise’ objectives.
- Defining the critical information entities.

**IS planning types**: a study of United States Accounting office (1992), there are two types of IS Planning types, Top-Down Planning and Bottom-Up Planning. **A Top-Down Planning** is generic information system planning methodology that attempts to gain a broad understanding of the information system that needs of the entire organization. Under this approach characteristic of the system’s hardware, software, facilities, data and personnel are identified and defined through detailed design and analysis to achieve the most cost-effective system for satisfying the information needs of an organization. The process must consider system life cycle management and the organization’s policy and budget as important integral factors (Staff Study of United States Accounting office, 1992).
Where as **Bottom–Up Planning** is generic information systems planning methodology that identifies and defines IS development projects based upon solving operational business problems or taking advantages of some business opportunities (John and Joe, 2002).

Information system planning is not a one-time event- it should be revisited periodically to ensure a system’s continued viability in meeting information needs of an organization and achieving long-term missions.

**E-Governance**, several dimension and related factors influence the definition of e-governance. The word “electronic” in the term e-Governance implies technology driven governance. According to Saugata and Masud (2007) “E-Governance is the application of Information and communication Technology (ICT) for delivering government Services, exchange of information communication transactions, integration various stand-alone systems and services between Government and citizens (G2C), Government and Business (G2B) as well as back office processes and interactions within the entire government framework. Through the e-Governance, the government services will be made available to the citizens in a convenient, efficient and transparent manner. The three main target groups that can be distinguished in governance concepts are Government, citizens and businesses/interest groups. The external strategic objectives focus on citizens and businesses and interest groups, the internal objectives focus on government itself.”

E-Governance is more than just a government website on the Internet which tangible objectives are follows (Michiel, 2001):

1. To provide citizen access to information and knowledge about the political process, and about the services.

2. To enable the citizen transition from passive information access to active citizen participation by:
• Informing the citizen
• Representing the citizen
• Encouraging the citizen to vote
• Consulting the citizen
• Involving the citizen

1.10 Organization of the Dissertation

This research is divided into seven chapters.

Chapter One focuses the introduction of the research as well as background of the research, problem statement, research objectives, research questions, significance of the research and related terms and definition of this research.

Chapter Two is literature review of the research which mainly focuses e-Governance areas, model, information system planning architecture, current status of e-Governance of Bangladesh, Successful e-Governance initiatives, e-Governance and Bangladesh: Challenges and finally a comparison e-Governance strategy between other countries such as Malaysia, Canada, Singapore and India.

Chapter Three is covering a Competitive Intelligence methodology for information system planning. This methodology is intended to (1) provide a basis for systematically determining information needs for eGovernance (2) identify and analyze information and data needs and relationships, (3) identify and analyze the collected data or information to access whether they are useful for strategic purpose (4) the intelligence is forwarded to the strategic decision-makers and provided ISP formulation for eGovernance which consists
the mission and vision strategy, the information architecture, technology adaptation, skill enhancement, finally the implementation strategy for e-Governance.

**Chapter Four** covers the research methodology and Data Analysis. This research followed on quantitative research methods, quantitative research techniques, and modes of analyzing and interpreting quantitative data that conducted by survey and interviews to SICT (Support to ICT Force Program Project, under the Ministry of Planning, Government of Bangladesh).

**Chapter Five** demonstrated a conceptual eGovernance framework based on survey, interviews data and previous research which addressed the applications, infrastructure, information security and privacy and enabling environment issues for an effective eGovernance in Bangladesh. Moreover, in this chapter illustrated a Road Map of ICT strategy to re-invention of e-Governance of Bangladesh which articulates the government's vision, targets, technical approach and standards for eGovernance systems.

**Chapter Six** illustrated the prototype design. In this chapter a fully workable prototype system has been developed. To design the prototype system, there are used open source tools (PHP, My Sql).

In final the **Chapter Seven** provides recommendations and conclusion remarks of the dissertation.
1.11 Conclusion

This chapter introduced general idea to implement and proposed an information system planning framework for eGovernance in Bangladesh. E-Governance is no longer a matter of choice – it is a prime necessity of the day. ‘Whether information system planning for eGovernance will be implemented or not’ is not the right question to ask any more. The appropriate question is ‘how soon and how smoothly can the transition to eGovernance take place in Bangladesh government.'
CHAPTER 2
LITERATURE REVIEW

2.1 Introduction

The main purpose of this chapter is to provide an overall review eGovernance issues/status of Bangladesh. This chapter identifies the following factors:

- Previous research contribution in eGovernance.
- Identify the current status of eGovernance of Bangladesh, successful eGovernance initiatives, eGovernance and Bangladesh: Challenges.
- And finally a comparison of eGovernance strategies among the countries of Canada, Singapore, Malaysia and India

2.2 Areas and Scope of E-Governance

E-Governance holds the potential to facilitate the complementary use of information systems in government comprising both operational and strategic use (Kim, 2006). Dobrica (2006) state that, eGovernance aims to enable the interaction between government and citizens (G2C) (Government-to-Citizen), improve interagency relationships between G2G (Government-to-Government), and establish efficient relationship between the government and business enterprises (G2B) (Government-to-Business).
Above figure illustrates that the four major components of eGovernance in follows:

- **G2C (Government-to-Citizen):** Involves interaction of individual citizens with the government. G2C allows government agencies to talk, listen, relate and continuously communicate with its citizens, supporting, in this way of accountability, democracy and improvements to public services. G2C allows customers to access government information and services instantly, conveniently from everywhere by use of multiple media’s like PC, Web TV, Mobile Phone or Wireless Device.

- **G2B (Government-to-Business):** Involves interaction of business entities with the government. It allows e-transaction initiatives such as e-procurement and the development of an electronic marketplace for government. Companies everywhere are conducting business-to-business e-commerce in order to lower their cost and improve inventory control. G2G brings the opportunity to conduct online transactions with government as result reduce bureaucracy and simplifies
regulatory process, therefore helping businesses to become more competitive. The delivery of integrated, single-source public services creates opportunities for business and government to partner together for establishing a web presence faster and cheaper

- **G2G (Government-to-Government):** involves interaction among government offices as well as governments of other countries. Governments depend on other levels of government within the state to effectively deliver services and allocate responsibilities. In order to realize a single access point, collaboration and cooperation among different governmental department and agencies is compulsory. G2G focus online communication and cooperation among the government agencies and departments to share database, resources, pool skills and capabilities, enhancing the efficiency and effectively of process.

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

Source (Taifur, 2006 and Valentina, 2004)
2.2.1 Scope

The scope of eGovernance is wide spread. In following some of key component of eGovernance are discussed briefly:

- **Electronic Governance:** In this stage define the link up of government with citizens, business communities, NGOs, and communities. In other words, e-Governance initially began as a process where government entities developed websites and began populating these sites with information. After mastering this information dissemination aspect, government units moved toward processing online transactions. Subsequent to mastering transaction processing, governments moved across a continuum and engaged citizens online in a participatory framework; that is, offering Internet applications that connect citizens with public administrators, decision-makers, and perhaps elected officials (Richard, 2009).

- **Informational- Provides Access to Government Information to Citizens:** Government generates huge volume of information. The internet and other advanced communications technologies can bring this information quickly and more directly to citizens. However, informational sites is rich in content, are just a first step. In this stage ensure the potential involve citizens in the government process by engaging them in interaction with policymakers throughout the policy cycle (Taifur, 2006).

- **Knowledge Societies:** the idea that the society can gain competitive advantage internationally through using IT in a creative and productive way. This again
reinforces the linkage element across government, business, NGOs, and individuals (Planning Commission Report, Government of Bangladesh, 2007).

- **E-Commerce**: it refers the processes and structures that define the relationship between governments and private sector. At the same time, it includes the e-business relationship model which ensures these services consumed by entrepreneurs, businesses, and corporations, for a commercial purpose (Dobrica, 2006).

### 2.3 A Model of eGovernance

Governments around the world are fully aware of the benefits of employing eGovernance for improving public sector management practices and relationships with internal and external stakeholders. E-Governance is becoming a global phenomenon that is increasingly attracting the attention of community citizens including politicians, economists, decision and policy makers amongst others (Naheed et al., 2009). The quest to implement e-government is motivated by policy goals of increased effectiveness, efficiency, and information quality, improved interaction mechanisms, and in turn better governance tools (Grant, 2005 and Gronlund, 2005). To ensure better functioning, many governments have embarked many e-Governance model, upon ICT strategies (UN- Government Survey, 2008). For example, Howard (2001) and Lau (2001) proposed an eGovernance model that had four major stages: information publishing, two-way communication, transaction, and integration. In a survey conducted by the United Nations (2008) proposed a five-stage of eGovernance which are connected, transactional, interactive, enhanced, and emerging.
According to the Info Dev Report (2002), an effective eGovernance satisfies these following needs:

- Providing greater access to government information;
- Promoting civic engagement by enabling the public to interact with government officials;
- Making government more accountable by making its operations more transparent and reducing the opportunities for corruption; and
- Providing development opportunities, especially benefiting rural and traditionally underserved communities.

Figure 2.3 An eGovernance Model. Source (UN-Government Survey, 2008)
2.4 Information System Planning Architecture

Information systems are important tools for effectively meeting organizational objectives. Readily available, complete, and accurate information is essential for making informed and timely decisions. The organization must identify the Information System Planning Architecture on the basis of a systematic identification of information and analysis of organization mission and functions (Staff Study of United States Accounting office, 1992).

In following an Information System Planning Architecture described that illustrates the structure to the process of deciding how to meet information needs. Moreover, this architecture offers instructions for documenting an organization’s mission, determining how this mission is to be carried out and the information and data required to do so, analyzing this evidence and identifying a logical system architecture and configuration, and determining the hardware and software needed to effectively and efficiently meet these needs.
Figure 2.4 Strategic Information System Planning Architecture. Source (Staff Study of United States Accounting office, 1992)
This ISP Architecture invokes a structured, orderly process of obtaining and analyzing key information before initiating system acquisitions. The architecture is made up of eight steps:

2.4.1 Identifying the Mission

The organization should first analyze a new or confirming an existing mission, and determine how the organization will operate to accomplish its mission, and setting down the general operational requirements needed to achieve the mission. This first step focuses what the organization wants to accomplish (its mission), how it wants to accomplish the mission.

2.4.2 Identifying the Functions to be Performed in Carrying out that Mission

After the defined the organizations mission, all the specific functions (tasks) needed to meet established requirements must be determined. Functions are the tasks or actions that must be performed to meet the operational requirements.

2.4.3 Identifying Information Needed to Perform those Functions

After the different functions have been analyzed, all information needed to effectively perform and manage the functions to accomplish the organization’s mission should be identified. However, it is important that only one functional element or organization be identified as responsible for maintaining the information generated to ensure that information integrity is maintained. Further, the specific information needed for each
function (what is to be done), process (how it is to be done), and location (where it is to be done) should be described or identified (Staff Study of United States Accounting office, 1992).

### 2.4.4 Identifying Data Needed to Perform Those Functions

Information is made up of data. It is essential to identify all relevant data, who creates and uses it, and how it flows through the organization. Different organizational entities use different subsets of data, all of which relate to the same piece of information.

### 2.4.5 Identifying specific Applications Needed to Provide That Information

A description of how the applications manipulate data to create information, and how this relates to the functions and the mission, is called the applications architecture. In this stage, after defined the information, manage function and basic data the application must be designed to manipulate data to produce the information.

### 2.4.6 Specifying a Logical System Definition

The logical system can be defined as a combination of all the steps discussed to this point-the functional architecture, the information architecture, the data architecture, and the applications architecture. All of these views of the system are interrelated, and each one builds upon its predecessor. The logical view of the system provides a profile of how the
applications and their related data are grouped to form subsystems and how those subsystems support the various functions required to achieve the mission.

2.4.7 Exploring Alternative Architectures

It is important, therefore, to consider a broad range of alternatives (each discussing hardware, software, communications, data management, and security considerations) before selecting specific target architecture. Each alternative architecture should address the current and potential future missions and be analyzed in terms of its present and future operational effectiveness, flexibility, maintainability, and cost effectiveness.

2.4.8 Finally Selecting Target Architecture

Finally the architecture selected based on earlier alternatives architecture should be as open and flexible as possible to allow for future change and growth. Selecting target architecture will be used as a blueprint to guide information system development, upgrade, and expansion over time—from the alternatives identified requires that the organization consider how well architecture meets the organization’s near- and far-term information need.

Source (Staff Study of United States Accounting office, 1992).

2.5 Way Forward: Need national eGovernance Strategy for Bangladesh Government

E-Governance is no longer a matter of choice or debate for Bangladesh or other countries that wish to improve governance standards. The single most important lesson learned during almost two decades of e-governance initiatives of the country is ‘e-Governance is a
strategic choice not an operational alternative for service delivery (Morshed, 2007). Government needs to be sufficiently ‘ready’ before shooting for e-Governance objectives. A national ICT Strategy is required to address the following fundamentals elements of e-Governance readiness.

2.5.1 Facilitate Public Private Partnership Model to Work

E-Governance initiatives are often capital intensive and have to compete with projects addressing the other national development priorities. Hence, most countries that are seriously pursuing e-Governance have partnered with the private sector to share the costs and risks of starting and running e-Governance projects. In this context, a concrete policy framework is needed to engage the private sector to full utilization e-Governance in Bangladesh (Morshed, 2007).

2.5.2 Enhance Access to ICT tools for Citizens

The government needs to ensure equitable access to government services delivered online to all potential users. It is therefore important for the government to invest resources and introduce policies to extend access to ICT throughout the nation (Taifur, 2006). Participation of public sector needs to be ensured to speed up infrastructure roll out. Innovative means of content delivery like mobile telephony, community radio, etc. based solution should be encouraged and explored (Morshed, 2007).
2.5.3 **Creation of Local Content**

The government should take the lead in creation of locally relevant content in the local language. At the same time, preservation of local knowledge in easily understandable forms must be adopted. In the backdrop that more of Bangladeshi’s cannot read and hence, video data should be developed and implemented in eGovernance project (Bangladesh ICT Policy Monitor Network, 2007).

2.5.4 **Adopt Open Standards and Open Source Solutions**

It is highly unlikely that the country can embark on a single project to develop both its hardware and software solutions and can only address these needs gradually. To enable the nation to undertake small but manageable projects and gradually build up its e-Governance maturity, it is important that the nation adopts an open architecture for easy interoperability (Morshed, 2007).

2.5.5 **Plan for the Long Term**

E-Governance systems bear fruits only in long term. In other hand with technology changing rapidly, government should adopt long terms ICT plan.
2.6 An Overview of Bangladesh and Government of Bangladesh

Bangladesh, officially the People’s Republic of Bangladesh, is a country in South Asia. It’s surrounded by India on all sides except for a small border with Myanmar to the far southeast and the Bay of Bengal to the south. The population of Bangladesh approximately 150 million which made ranks eighth in the world according to population. But its area of approximately 144000 square km; is ranked ninety-fourth, making it one of the most densely populated country in the world. Despite sustained domestic and international efforts to improve economic and demographic prospects, Bangladesh remains an underdeveloped and overpopulated nation. The per capita income in 2005 was a low US$ 2100, and many other economic indicators were less than impressive. Yet, as the World Bank notes in its July 2005 Country Brief, the country has made impressive progress in human development by focusing on increasing literacy, achieving gender parity in schooling, and reducing population growth.

Although Bangladesh is an agriculture country, more than three quarters of Bangladesh’s export earnings come from the garment industry, which began attracting foreign investors in the 1980s due to cheap labour and low conversion cost. In 2002, the industry exported US$5 billion worth of products. The industry now employs more than 3 million workers, 90% of whom are women. A large part of foreign currency earnings also comes from the remittances sent by expatriates living in other countries.

Obstacles to growth include frequent cyclones and floods, inefficient state-owned enterprises, mismanaged port facilities, a growth in the labour force that has outpaced jobs, inefficient use of energy resources (such as natural gas), insufficient power supplies, slow
implementation of economic reforms, political infighting and corruption. According to the World Bank’s July 2005 “Among Bangladesh’s most significant obstacles to growth are poor governance and weak public institutions.

Source (Bangladesh ICT Policy Monitor Network, 2007 and Bangladesh, 2007)

**Bangladesh Government** is a parliamentary democracy. The president is the head of state, a largely ceremonial post. The prime minister, who is the head of government, holds the real power. The president is elected by the legislature every five years and has normally limited powers that are substantially expanded during the tenure of a caretaker government, mainly in controlling the transition to a new government. Bangladesh has instituted a unique system of transfer of power; at the end of the tenure of a government, power is handed over to members of a civil society for three months, who run the general elections and transfer the power to elected representatives. The prime minister is ceremonially appointed by the president and must be a member of a parliament (MP), commanding the confidence of the majority of the MP’s. The cabinet is composed of ministers selected by the prime minister and appointed by the president. The unicameral parliament is the 300-members House of the Nation or “Jatiya Sangshad” elected by popular vote from single member constituencies for five-year terms of office.

Source (Bangladesh, 2007)

**2.7 Current Status of ICT by Bangladesh Government**

Government of Bangladesh has declared ICT as one of the thrust sector. Realizing the importance of ICT a comprehensive national ICT Policy has been formulated in 2002 that
gives due importance to the issue of e-Governance, declaring that “The government shall use ICT systems within the public administration to improve efficiency, reduce wastage of resources, enhance planning and raise the quality of services.” The policy further states that “The government shall implement ICT system to provide nation-wide coverage and access by any citizen to the government databases and administrative systems which can be used to extend public services to the remotest corner” (Taifur, 2006).

To achieve this goals set forth by the ICT policy, an ICT Task Force has been formed, with the Honorable Prime Minister as Chairperson and the Secretary of Ministry of Planning as Member Secretary. In 2003, the government launched the Support to ICT Task Force (SICT) program at the Ministry of Planning, with the mandate of providing administrative and secretarial supports to the ICT Task Force in designing, planning and implementing various ICT projects, particularly eGovernance (Taifur, 2006).

Moreover, to remove the digital divide between the rural and urban areas in Bangladesh, government is trying to provide ICT facilities to the grass root level people. To create these facilities government now working with the private sector, NGOs and international donor agencies. Since most of the people of Bangladesh (about 80%) are living in the rural areas, without providing ICT access to these rural and underserved people communities with affordable and reasonable cost, information society cannot be materialized (Mesbah, 2006).

The following table summarizes some of the major ICT policy and strategic actions taken by different government stakeholders across the country.
<table>
<thead>
<tr>
<th>ICT Policy</th>
<th>Action taken/Implementation Status</th>
</tr>
</thead>
</table>
| ICT Infrastructure in Government | * MoSICT has proposed a project to provide computers, IT human resources and broadband to 38 ministries  
* SICT has taken up e-governance projects in 10 ministries  
* PMO has established its own VSAT communication facility  
* BCC has established its own VSAT and has provided broadband Internet to government, private and incubation center  
* Planning Division has linked PMO, Finance Division and Planning Commission and 6 other ministries. |
| Funding/Sustainability of e-Governance | * National ICT Policy mentions 2% for IT, but it is not implemented yet |
| ICT infrastructure across the country | * Link with submarine Cable to be established by mid-2005  
* DDN will connect entire country  
* All analog systems have been converted to digital  
* BCC has distributed computers and accessories to more than a thousand schools across the country, including training teachers |
| Public Access to ICT | *ICT Act to passed in parliament soon  
*Cyber cafes are available in all major towns  
* BTTB to introduce GSM to lower cost |
<table>
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<tbody>
<tr>
<td>Government shall implement wide-spread ICT System to provide nation wide coverage and access by any citizen to the government databases and administrative systems which can be used to extend public services to the remotest corner</td>
<td>* Many government offices has already built their own databases for internal use, but very few provides access to these databases to the public for increased transparency</td>
</tr>
<tr>
<td>All government must be networked to the National Data Resource Center in shortest possible time</td>
<td>* The National Data Resource Center has not been established yet, but SICT is taking steps towards that</td>
</tr>
</tbody>
</table>

(Source: by interviewing, from the Ministry of Planning, Government of Bangladesh.)

2.7.1 Role of governments and all stakeholders in the promotion of ICT for development

The government of Bangladesh emphasizes greatly on the implementation of the National ICT policy for achieving the transparency, accountability and efficiency. To achieve this objective, the government has initiated several projects and programs (Mesbah, 2006).
• The Ministry of Science and ICT has come up with a comprehensive ICT Policy in October 2002 that lays out the national priorities with respect to using ICTs for economic and social development.

• The civil society has also come forward by initiating some projects that aim to use ICTs for development goals. A number of new ICT-centric NGOs have been established, while older NGOs are in the process of re-orienting themselves to incorporate ICTs as part of their key strategies.

• The media is taking on a particularly important role in promoting ICTs to general citizens. Several ICT magazines in Bangla as well as in English are in circulation, while most daily newspapers and weekly magazines have exclusive sections on ICTs.

• The international agencies, such as World Bank, ADB, UNDP, are particularly active in the area of promoting and financing projects that are aimed towards the effective use of ICTs for development. They are also providing technical and financial assistance in developing policies and regulations necessary in an increasingly networked world.

• Government is setting up interactive websites through its various ministries/agencies to provide services to its people in a more effective way. Already a good number of such web-based Governments to Citizen (G2C) services are in operation across the country.
2.7.2 Successful eGovernance Initiatives

Mixed with failed or not so successful e-Governance initiatives by Bangladesh government are a few truly successful initiatives that delivering improved citizen services. In following some major e-services to citizens are noted:

2.7.2.1 Process Automation at GM North’s Office under the Ministry of Post and Telecommunication:

E-Governance application at GM North’s office, including internal process automation and online citizen services which is a significant milestone in the country’s development in eGovernance. This e-service provides (Taipur, 2006):

1. Telephone subscriber information system with user friendly interface for data entry, queries, sorting and customized report generation.
2. Online access to recent status of application for new telephone lines or shifting of telephone line to new address.

2.7.2.2 Center for Environmental and Geographic services:

Environmental and geographic Information Services (CEGIS) is an organization for environmental analysis using geographic information systems and remote sensing, as well as information technology and databases. The inter-disciplinary activities of CEGIS address sectors such as water resources, agriculture, fisheries, and environmental, engineering, transportation and are implemented by staff that specializes in following areas (Taifur, 2006).
1. Digital archive of satellite Images
2. Flood extend mapping by satellite image
3. Decision support system for cyclone shelter management
4. Land information system.
5. GIS based drought assessment.

2.7.2.3 Bangladesh Hajj Online Information, Under Ministry of Religious Affairs

Through an innovative e-Governance initiative, the Ministry of Religious Affairs has launched the website in 2002 to provide some informational-based services to the pilgrims, their relatives and friends, agents and related government officials. The interactive website can be used for searching information about individual pilgrims, including current location and status, send and receive message from individual pilgrims (Farooq et al. 2004).

2.7.2.4 Online Daily Market Price under the Ministry Agriculture

(http://www.dam.gov.bd as 29th Dec, 07)

The SICT has undertaken this e-application of making agricultural market prices available online to push the country towards greater economic growth by empowering farmers and businessman involved with agriculture sector. Particularly this site provides:

1. Daily Market Information from 30 districts has been made available in online
2. Price information of about 260 agricultural commodities has been made available
3. Data can be easily downloaded from the website by specifying the commodity, the market and the data-range
4. Farmers are better informed about the best prices of their products and can take decisions accordingly.

2.7.2.5 Online public Exams Results and Education Statistics under Ministry of Education (http://banbeis.gov.bd as on 24th Jan, 08)

The SICT program has undertaken this project of providing result of public exam online in an effort to develop an efficient system for accessing results of individual student. In particular this site provides:

1. Making student results of board exams available in online
2. Making exam registration information available in online
3. Making different kinds of educational-related application forms available in online

2.7.2.6 Electronic Birth Registration System

Electronic Birth Registration System was introduced by The Rajshahi City Corporation (RCC) and the Local Government Division of the Ministry of Local Government with technical and financial support from UNICEF. This is probably the best local level e-governance example of Bangladesh where a local government body, in their own initiatives and leadership and with support form development partners took such a bold step forward. The system also doubles as an immunization management system. Once registered, the system also generates an immunization schedule for every child. To system generated ID is also used to get admission in the public schools of the city (Bangladesh ICT Policy Monitor Network, 2007).
2.7.2.7 Interactive Website for Ministry of Expatriate Welfare and Overseas Employment

Overseas employment is biggest source of foreign exchange in Bangladesh. Under Ministry of Expatriate Welfare and Overseas Employment, this e-application has been introduced. This site provides citizen to find out information about job opportunities in abroad easily and efficiently. News and announcement for expatriates and those interested to work in abroad (Taifur, 2006).

2.8 E-governance and Bangladesh: Challenges

Bangladesh faces a variety of governance challenges, including corruption, public administrative malaise, and lack of adequate transparency and accountability in the exercise of public decision making powers and the delivery of public services (Farooq et al. 2004). There are a lot of reasons for not having e-governance facilities and walking in the path of progress. Only a few are expressed here:

2.8.1 Inadequate Infrastructure across the Nation and Planning

Bangladesh, as is in most of the least developed countries; Inadequacy of ICT infrastructure is a main problem across the country as well as government offices to implement e-governance. This situation is further compounded by the marked absence of technical infrastructure planning and sub-optimal utilization of whatever infrastructure is available (Morshed, 2007). According to Taifur (2006), at the Ministry and division level, for every
100 employees there are respectively 15 and 4 Internet-connected PC’s available. At Department level / Corporation level, on an average, only 1 Internet-connected PC is available for every 100 employees and at the academic institutions 27 Internet-connected PCs are available for every employee.

In other hand, most of the 64,000 villages in the country, home to 70% of the population, do not have Internet Connectivity, even proper electricity or hard wired phone connections (Moshtaq, 2004).

Bangladesh's international telecommunication used to be satellite-dependent, relatively slow in speed and costly. In end of 2006, a submarine cable was installed. Though late, it is a significant step in ICT infrastructure development in the country (Mesbah, 2006).

However, despite the remarkable growth in certain elements of information infrastructure, Bangladesh is still struggling to move forward with respect to other important components of a national information infrastructure, such as security and privacy of network and information, legal and financial infrastructure, and technology convergence across the country.
Figure 2.8.1 ICT Infrastructure and Access in Bangladesh. Source (ICT at a glance of Bangladesh, 2003)
2.8.2 Administration

In absence of central e-Governance coordinating and monitoring entity, the tasks of prioritizing and controlling the quality of the e-governance projects remained as a challenge in Bangladesh (Bangladesh ICT Policy Monitor Network, 2007). E-Governance requires rethinking the standard operating procedure. The existing administrative rethinking mechanism is not aligned with e-governance activities and plans. Such lack of coordination between administrative reform and e-governance is another challenge to fully utilization of e-Governance (Morshed, 2007).

2.8.3 Economic Aspects

The economic/financial challenges are another major obstacle to implement eGovernance system in Bangladesh. Like other developing countries, Bangladesh government fund are not sufficient to acquire technology for eGovernance implementation (Bangladesh ICT Policy Monitor Network, 2007).

2.8.4 Political Aspects

In Bangladesh, a country where technology acquisition raises a number of political questions. A survey of Chowdhury (2008) stated that one of the reason to failure to eGovernance in Bangladesh, because of poor internal political leadership also mentioned that political desire may not be enough to successfully implement e-Governance. However, lack of political desire may work as high barrier to implement e-Governance. It is clear that
to the possible transfer of political power from political elites to the technical specialist which is more prominent in computer based technologies because these technologies are directly related to retrieve and processing data and information. Those at management level are mainly from non technical backgrounds, as result of which there is always conflicting between two groups (Junelee, 2002).

**2.8.5 High-Cost, Low-Reliability of Internet Access**

Internet access cost in Bangladesh is very high and highly unreliable. There are virtually no dial-up options outside major cities since long distance calls are exorbitantly expensive. Internet access and availability of PCs are disproportionately concentrated in major cities of Dhaka and sea port city in Chittagong. Most ISPs are dependent on VSAT transmission and the bandwidths being used varies from 64Kbps to 4Mbps. 60 % ISPs are between 128Kbps and 1Mbps in this concern (Mahbubul, 2007). According to Taifur (2006) Bangladesh has a very low level of internet and PC penetration standing at 0.04% and 0.09% respectively. There are no public places that allow access to the internet at low cost. In such scenario, it is matters of great concern how people would get G2C services even if government offered.
2.8.6 Inadequate Human Resource Capacity

Bangladesh is a country of more than 150 million people where the number of IT-trained people is inadequate with about 1,630 incoming students at public universities, 2,370 at private universities and 1,120 at polytechnic Institute. And major portion of well trained IT graduates of the country leave since there is little scope for them in terms of professional development (Mahbubul, 2007). Morshed (2007) Pointed that many e-Governance projects in Bangladesh gravely suffer to implement due to lack of skilled ICT professional person. Only ICT skill courses available for the civil servants are not enough to bridge the gap. There is not much done for the civil servants to enhance their ‘soft-skills’ associated with managing implementation of e-Governance systems.
2.8.7 Lack of Training Program

Many eGovernance or computerization projects suffer gravely from lack of adequate training facilities. Training is of vital necessity in familiarizing users with computers and breaking their fears. Mahbubul (2007) stated that some officials go through unplanned ‘IT Training’, often in another country, and then come back not getting any scope for utilizing his/her newly gathered knowledge of IT and forgetting it all in due time. The training programs are mostly not need-based and arranged at arbitrary periods, not during the implementation phase of an eGovernance project.

2.8.8 Lack of Bangla Standardization

Currently, there is no standardization for use of Bangla in the electronic format. This issue is that none of Bangla fronts maintain the international standard “UNICODE” as a result of which Bangla content cannot be put up on the internet using these fronts (Mahbubul, 2007).

2.8.9 Lack of Regulatory/Legal Framework

In Bangladesh still needs to strive to have an operational regulatory / legal framework including relevant Cyber Laws. There are no laws to protect against cyber-crime, neither are there any laws for electronic authentication (Taifur, 2006).
2.8.10 Supply of Electricity across the nation

Still Bangladesh can’t supply electricity across the whole country. According to Mahbubul (2007) only with 30% of the population of Bangladesh having access to electricity. In such scenario, it is a matter of great concern; electricity has to be solved before a widespread dissemination of eGovernance as possible.

2.9 Comparisons of eGovernance Strategies among the Canada, Singapore, Malaysia and India

This section provides the national eGovernance policy with some developed and developing countries to get rigorous knowledge on implementing eGovernance in Bangladesh. Here, as the developed countries Singapore and Canada has been chosen as these countries are successful in implementing e-government (INTAN Report 2007). A survey of United Nations (2008) the position of Canada and Singapore 7 and 23 respectively in based on e-government readiness, where as Bangladesh took the position 142 and based on e-participation Singapore and Canada took the rank 10 and 11 respectively. In the other hand as a developing countries Malaysia and India has been chosen as these countries more growing in terms of e-Governance (INTAN, 2007 and Das and Chandrashekhar, 2007). According to e-Governance readiness Malaysia and India acquired the rank 34 and 113 respectively (United Nations- Survey, 2008). Besides, as a neighbor country, India has given priority to be chosen, because of the similarity of social-economic condition in both countries.
2.9.1 Singapore

Singapore is currently implementing ‘Connected Singapore’ with its vision of ‘**Infocomm**’ as “a key enabler, unleashing the potential of individuals, organizations and businesses to become more productive and efficient, and to create new ideas that enrich lives and produce new value. This, Singapore’s fifth ICT master plan, will be implemented through four ‘galvanizing strategies’ (Emmanuel, 2004):

1. **“Infocomm” for Connectivity, Creativity and Collaboration:** This strategy aims to drive the development of an “infocomm” infrastructure for pervasive and secure access, promoting the development of useful applications for work, play, lifestyle and learning, encouraging usage of applications and services; and promoting “infocomm” literacy. Moreover, the Infocomm Security Masterplan (Masterplan) provides the overarching plan in Singapore’s continued national efforts to enhance cyber security. To achieve this objective of the Masterplan some of the key initiatives that Singapore has undertaken include

   (1) The **National Cyberthreat Monitoring Centre (NCMC)** that provides in early detection of potentially devastating cyber attacks and the ability to respond to cyber security incidents in real time. (2) The **National Authentication Framework (NAF)** that aims to catalyse e-business through the pervasive deployment of strong authentication infrastructures across key sectors. (3) The **Critical Infocomm Infrastructure Surety Assessment (CII-SA)** project that was set up to assess the infocomm security readiness of
Singapore’s critical infocomm infrastructure (CII), and to ascertain the adequacy of the infocomm protection measures implemented by infrastructure owners and operators.

2. Digital Exchange: A strategy to develop Singapore as a leading global digital distribution and trading centre to create a new source of growth and extend Singapore’s hub status in the digital medium.

3. Engine of Growth: In this strategy focuses to grow new economic activities and create jobs in “infocomm”, emphasizing opportunities that leverage Singapore’s traditional hub status.

4. Agent for Change: this strategy for the aims to help businesses and government agencies use “infocomm” to achieve higher efficiency, effectiveness and customer satisfaction.

Moreover, In order to ensure a strong growth of e-government in Singapore, several strategies were being adopted. This strategy, public service information infrastructure (PSI), has three types of infrastructure (INTAN, 2007):

- Physical infrastructure: In the physical infrastructure, the Singapore government has provided Internet access points in convenient places such as public libraries, shopping malls, government offices, hospitals subway stations, clubs.
• **Technology infrastructure strategy:** In technology infrastructure strategy the Singapore government has provided computers, servers, networks (broad band and wireless), mobile devices, smart cards as well as technology standards that are open and scalable such as Java, XML and web services.

• **Authentication Infrastructure:** In authentication infrastructure strategy, the Singapore government has provided e-government user ID and password for its entire citizen. Thus it made easier for every citizen to know how to log in online and access, government information and services.

After the ICT infrastructure, and legislation and policy are in place, the Singapore government’s final strategy is to develop a website called E-Citizen portal (www.ecitizen.gov.sg). This portal enables citizens to ask questions and receive answers, and provides 1600 e-services pertaining to business, health, education, recreation, employment, family etc. Of this, 1300 e-services are completely transacted by citizens with government online (Patricia 2003). A report of INTAN (2007) state that if the citizens personally go the relevant offices for the services, there is penalty imposed and after paying the penalty, the citizen must use the provided e-services.

2.9.2 Canada

Canada has been the world’s leader in e-government maturity in last five years. The global average for government website usage by citizen is about 30%, where as in Canada the statistics is over 51% core of the technical infrastructure that supports (Irfan and Ajax, 2005). The vast majority of Canadians visit government websites to obtain information,
rather than interacting or transacting with the government (Vinod et.al., 2007). It is the vision of the Canadian government to allow citizens to choose how they wish to access information and services. Electronic service delivery should be accessible to all people around the country irrespective of their income, language or disability. To enable these e-government services the federal government has devised a strategy (Comnet-IT Report, 2002). The key elements of this strategy are:

(i) A government-wide information management-information technology infrastructure that provides a secure and trusted environment to connect with citizens and the private sector,

(ii) a world-class government information management-information technology workforce and

(iii) successful adoption of integrated governance frameworks to guide information management-information technology investments, manage risks and set standards

A study of INTAN (2007), the core of the technical infrastructure that supports e-government in Canada is a secure channel to deliver safe high-speed access to government online services. For online transaction, Canadians use the “epass” as a digital signature. One of the interesting e-government initiatives in Canada is its wireless portal that gives citizens mobile access to information, e-mail, and personal services. The Canadian government always asking the Canadian citizen on what the governments want. Furthermore, Canada regularly survey citizens and business about their attitudes and needs. The idea is to reach out to customers and proactively see what they want. Other than that, Canada is actively marketing its e-Government services. The marketing strategies include advertisement on television and radio, advertisement in airline magazine
and newspaper. This is just to get the citizen and business to use its portal (INTAN Report, 2007)

A study of Dobrica (2006) shows that, while most governments around the globe are still struggling to meet citizens’ expectations for better service despite huge investments in e-services, Canada is among the few countries that have effectively managed to achieve significant service improvements through e-Government. Canadians are among the world's most enthusiastic Internet users, which can help explain the high rates of take-up of the country’s online public services. In addition, the study revealed that:

- 71% of Internet users have used a federal government website in the past 12 months, and 31% said their most recent contact with federal government was via the Internet.
- 81% of Canadian e-government users were either satisfied or extremely satisfied with the services.
- 77% of Canadians having recent contact with the federal government said that accessing the Internet service was easy, compared to 67% across all delivery channels.
- 76% of current Internet users believed the Internet has made it easier to find information about government programs and services.

2.9.3 Malaysia

Malaysia has embarked on a number of measures to ensure that information and communication technologies (ICTs) play a vital role in that society. The National IT
The National IT Council (NITC), launched by the National IT Council (NITC) in 1996, serves as the main policy statement on the development of ICTs in Malaysia (Emmanuel 2004). A study of Comnet-IT (2002), the National IT Agenda, provides the foundation and framework for the utilization of ICT to transform Malaysia into a developed nation. The NITA vision is to use ICT to transform Malaysia, across all sectors, into an information society, then a knowledge society, and finally a "values-based" knowledge society. The necessity for a strong ICT infrastructure has been recognized by Malaysia, who has built up its capability in ICTs to improve its capacities in every field of business, industry and life in general. Currently, Malaysia is in full gear to meet the challenge of globalization by enhancing the nation's competitiveness, through the infusion of knowledge in all production-based industries and steering toward a knowledge-based economy. One key initiative aimed at fast tracking Malaysia into the information age is the MSC (Malaysia's Multimedia Super Corridor), an important component of the Malaysian e-strategy, which was introduced by the Malaysian Government in 1996. Two smart cities have been developed within this corridor, namely Putrajaya and Cyberjaya. The address describes the hard and soft infrastructure that has been put into place. This includes, for example, a fibre optic backbone network covering 360 kilometres. The Government has put in place a legal framework, and institutional framework with coordinating mechanisms and a set of ICT policies and guidelines. National and state ICT councils have been established. The National IT Council (NITC) represents the highest ICT forum that acts as a think tank and advises the Government on national ICT strategies. The NITC is chaired by the Prime Minister. No matter how good a domestic infrastructure is in place, there is a need for a regional or perhaps even global ICT framework to deepen cooperation and to regulate the now borderless world.
As stated in the Eighth Malaysia Plan (2001), NITA provides “the framework for the orderly development of the country into an information and Knowledge-based society by 2020”. The NITC, which is the apex ICT body in Malaysia, has formulated an NITC Strategic Agenda with five key thrust areas to enable the country to “migrate to the e-World of the new millennium” (Emmanuel 2004). These are:

- **E-Community**: to enhance the quality of life of all Malaysian communities through ICT;

- **E-Public Services**: to get the public, private and community sectors to collaborate on an ongoing basis to enable the provision of people-oriented, customer-focused services electronically;

- **E-Learning**: to create and develop, through ICT, formal and informal learning networks for communities, with the goal of cultivating an ethos of life-long, continuous learning for individual, organizational and social advancement;

- **E-Economy**: To oversee the optimal usage of ICT in developing a knowledge economy making it grow and become globally competitive;

Further more, The Multimedia Act of 1998 provides the following ICT policy objectives: (Emmanuel 2004)
1. To establish Malaysia as a major global centre and hub for communications and multimedia information and content services;

2. To promote civil society where information-based services will provide the basis of continuing enhancements to quality of work and life;

3. To grow and nurture local information resources and cultural representations that facilitates national identity and global diversity;

4. To regulate for the long-term benefit of the end user;

5. To promote a high level of consumer confidence in service delivery from the industry;

6. To ensure an equitable provision of affordable services over the ubiquitous national infrastructure;

7. To ensure information security and network reliability and integrity

2.9.4 India

India is faced with a large number of challenges that are typical of developing countries. Government of India recognizes that e-Governance, in the context of developing countries, provides an excellent opportunity for improving governance. Today, in India many different types of eGovernance project are being implemented in the different parts of country (Shirin 2004). Moreover, various agencies of the Government and civil society organizations have taken a large number of initiatives across the country. In following some specific governance initiatives are noted (Das and Chandrashekhar 2007).

1. 98% of export and 90-95% of import documentation computerized in government activities

2. 80% of Service Tax returns electronically processed
3. Direct e-credit of Monthly Income Scheme returns into the investors accounts
4. 100% passport information computerized
5. AP (State Government of Andhra Pradesh) Portal providing citizen centric services such as: Birth/Death Certificates, Property Registration, Driver’s License, Govt. Applications & Forms, Payment of taxes / utility bills etc.
6. Automation of Land Records (State Government of Karnataka) which provides computerized Record of Rights Tenancy & Crops (RTC) - needed by farmer to obtain bank loans, settles land disputes etc. It has also ensured increased transparency and reliability, significant reduction in corruption, exploitation and oppression of farmers.
7. LOKMITRA (State Government of Himachal Pradesh) Which offers online registration of applications, Rural e-mail facility, village auction site, information on Mandi (farm products market) rates sending and receiving information regarding land records, income certificates, caste certificates and other official documents.
8. E-Mitra: Integrated Citizen Services Center (State Government of Rajasthan) which provide payment of electricity, water, telephone, taxes bills, Ticket Reservations Filing of Passport applications Registration of birth/death

(Source Das and Chandrashekhar 2007)

Moreover, India is currently on its 10th Five-Year plan for IT Sector. The Plan identifies major initiatives and projects to be pursued: encouraging new software technology parks; setting up community information centres; developing Indian language interfaces to computers and IT; encouraging e-commerce and e-governance; Media Lab Asia; training and research on IT security; and human resources development. The objectives of 10th Year plan include (Emmanuel, 2004):
• To ensure the sustained growth of software and IT-enabled services and increase India’s share in the global IT market as well as expand the domestic market;
• To put in place a policy framework to make India a major force in the hardware manufacturing sector;
• To use IT in governance;
• To bridge the digital divide;
• To promote the development of software in Indian languages; and
• To improve the quality of human resources, skills, and research and development (R&D) in the sector.

Furthermore these plans focus in following sector (Das and Chandrashekhar, 2007):

**Agriculture:** There are numerous sub-projects pertaining to provision of timely expert advice to farmers, food security, marketability and commercial information relating to agricultural products, enhancing crop productivity, enhancing the reach of and ease of access to micro-credit, etc.

**Common Service Centres (CSCs):** is one of the integrated projects envisioned in NeGP. The CSCs provide assisted community access points – a necessity in a country with relatively low levels of literacy and ICT penetration in rural areas. For a common citizen, it is often confusing and time-consuming to have to visit different departments and identify the right official or office to avail of some service. This one stop shop is also helpful in increasing accessibility, enabling faster service delivery, curbing corruption and reducing difficulties faced by vulnerable and marginalized groups. Under this program, it is aimed to
establish 100,000 CSCs predominantly in the rural areas to serve the needs of the traditionally underserved areas.

2.10 Conclusion

This chapter concludes that Bangladesh is ideally stepping into building information society and going for introducing eGovernance. Government is gaining some unsatisfactory progress by initiating some programs and new online e-services. However, Bangladesh as a most developing countries is facing vast challenges while implementing eGovernance successfully. Political, social, economical, technological aspects are the sectors where government is facing most troubles. In this chapter, a brief study of current status of eGovernance in Bangladesh was carried out which come out that government has launched some e-services to the citizen. However the serious issues such as inadequacy ICT infrastructure, misleading of administration, lack of finance, unstable political condition, low-reliability of Internet access, insufficient electricity across the country etc are major challenges to implement eGovernance successfully. Finally researcher pointed the major eGovernance strategy among the countries of Malaysia, Canada, Singapore and India to get rigorous knowledge on implementing eGovernance successfully in Bangladesh.
CHAPTER 3

COMPETITIVE INTELLIGENCE (CI) FOR INFORMATION SYSTEM PLANNING TO E-GOVERNANCE

3.1 Introduction

The complexities of information systems can be vastly different, but the analyses to determine an organization’s information system planning to carry out its mission are essentially the same regardless of the complexity of the problem. Various public and private organizations have devised methodologies for identifying information needs and planning acquisitions to fill those needs. While the methodologies were slightly different, each espoused a top-down, structured approach to identifying information needs and analyzing how to meet those needs. This chapter focuses using competitive intelligence methodology for information system planning which emphasis on analyzing, designing, and developing open and flexible information system architectures for e-Governance that can be used to meet information need or can be upgraded to future information needs. A competitive intelligence methodology is the organizational process for systematically collecting, processing, analyzing, and distributing information about the environment of an organization for strategic purposes. It can strengthen information flow among government agencies and within the private sector and civil society.

This methodology is intended to (1) provide a basis for systematically determining information needs, (2) identify and analyze information and data needs and relationships, (3) identify and analyze the collected data or information to access whether they are useful
for strategic purpose (4) the intelligence is forwarded to the strategic decision-makers and used to formulate their strategic ICT plans.

3.2 Competitive Intelligence as a Process

In the realm of government, ICT applications are promising to enhance the delivery of public goods and services to citizens not only by improving the process and management of government, but also by redefining the traditional concepts of citizenship and democracy. Although, the impact of e-Governance has not been assessed properly in a systematic way in most developing countries, some reports indicate that public society, in developing countries resist e-government project, and may refuse to adopt new procedures (Subhash, 2007). This problem occurs in lack of proper information system planning. This chapter focus a proper information system planning methodology for e-Governance to promote more efficient and effective governance, facilitate more accessible government services, and allow greater public access information. Information systems planning, as for any other, system begin with the identification of needs. Additionally, appropriate information must be identified and used to evaluate the effectiveness of polices and decisions. Accurate, timely, and comprehensive Information Systems Planning is required to support economic development decision and policy making at all levels of government (Salahuddin and Rusli, 2005).

Competitive intelligence (CI) can be defined as process for systematically collecting, processing, analyzing and distributing to decision maker’s information about an organization’s external environment for strategic purposes (Bonnie, 2007). To (re-) formulate government strategy, needs to collect and process information about their
environment—from public sector to enhance the access to and delivery of government services to benefit citizens, business partners and employees. As Dirk (2004), Competitive Intelligence focuses into four stages:

**Planning and Direction:** Organization determines its “Strategic Information requirement” which focuses in what aspect data should be collected in order to produce intelligence.

**Collection:** In this stage, it is determined what sources can be used for data collection and the data actually collected in order to produce intelligence.

**Analysis:** In analysis stage, collected data are analyzed to access whether they are useful for strategic purpose.

**Dissemination:** Intelligence (analyzed data, produced in stage 3) is forwarded to strategic decision–makers and used to formulate organization strategic plans.

The empirical tools usually play the central role at early stage of the design of an e-Governance assessment, evaluation as well as formulate strategies. Planning for information systems, as for any other system, begins with the identification of needs. In order to be effective, development of e-Governance system should be based on best understanding of citizen requirements.

As it’s already acknowledged that Competitive Intelligence (CI) for Information system planning into four stages: (1) Direction and Planning, (2) Collection, (3) Analysis, and (4) dissemination. The whole process (comprising these four steps) is usually called the
Intelligence Cycle. Furthermore here, the researcher added another components- ISP formulation for an effective e-Governance.

3.2.1 Direction

In the direction stage, the “strategic Information requirements” are stated. In this stage, the government should first analyze its current structure and process with citizen services requirements. The strategic direction of e-Governance is to support and simplify government activities for all parties; government, citizens and business. In this stage, one determines about what aspects of environment information should be collected. It should satisfy the following criteria (Dirk, 2004):

1) Information is directly routed to relevant arms of government and public society.

2) Information can be internally tracked so the recipient of feedback is held accountable for processing it.
3) Information can be extremely tracked so the feedback providers can follow-up inquiry.

In other words, the citizen should feel that the information, feedback, or complaint sent to the government is actually processed and can be traced. Because the interactions are traceable, public feedback mechanism are the key to increase transparency in e-Governance initiatives.

### 3.2.2 Collection

In the second stage of the intelligence cycle, the required data are collected. The collection activity involves obtaining information from primary sources, usually public sector. Competent information collection of this kind requires an extensive knowledge of interviewing techniques and the ability to develop and maintain a personal information network. Effective collectors often have journalism or investigative government backgrounds. The activity of collecting information in this way is also called "human intelligence" or "humint." It is extensively used in government and security agency operations (Bonnie, 2007). To this end, two main activities are needed: (1) determining what sources are available for collection and (2) accessing these sources and retrieving data from them. As Drik (2004) has pointed several sources:

- Open versus closed sources( open sources are accessible by everyone, closed sources are not)
- Internal versus external sources ( this distinction refers to the location where sources with data about the environment can be found; inside the government and public sector)
• Primary versus secondary sources (primary sources that hold the original data, unaltered from directly from the sources from which the data stems. Whereas secondary sources offers altered data.

To collect certain data, knowledge about the available sources should be gathered and used. This entails knowing that (1) what sources may contain the desired data, (2) whether these sources can be approached and accessed for an effective e-Governance (Dirk, 2004).

3.2.3 Analysis

In the third stage of the intelligence cycle, the data is analyzed. Information is analyzed in a specific environment of problems, transformed into “intelligence” and delivered to strategic point of view. After analyzing requirements and justifying preparedness, the introducer of e-Governance should have to start in articulating visions and defining strategy (Moshtaq, 2004). If the vision does not match with current situation then it should have to return back to comprehensive e-readiness program. Moreover, at this stage government has to formulate a long term vision with considering citizen immediate solution of their public services and securities. The proper link with present and future investment expectation should lead this formulation of vision and strategies.

3.2.4 Dissemination

In the last stage of the intelligence cycle, the intelligence should be made available for strategic decision–making. Intelligence information provides as complete and as accurate an understanding of the environment as possible and helps to minimize uncertainty of e-
Governance. Relevant in this stage is to make sure that the intelligence is actually used in strategic decision-making. The intelligence cycle have to be translated into clear measurable deliverables, involving development of applications and provision of decision making. At the same time this needs to be supported by detailed analysis of citizen needs, and re-engineering (Atan and Nitin, 2005). All kinds of measures may be helpful in accomplishing this. For instance as dirk (2004):

- Paying attention to the format and clarity of the presentation of intelligence to decision-makers.
- Using electronic means to store and distribute the intelligence to the designing e-Governance.
- Designing CI tasks and responsibilities in such a way that strategic management is involved in the intelligence activities.

3.3 ISP Formulation for e-Governance

At this stage of the study, the researcher formulates ISP for eGovernance which consist the mission and vision strategy, the information architecture, technology adaptation, skill enhancement, finally the implementation strategy for eGovernance.
Figure 3.3 ISP formulations for eGovernance

Above figure describes a sequential **ISP** formulation; depending on the situation faced one may be able to come back to a previous step. With these steps established the researchers able to map current government related activities against each of step and hence allowing an analysis of gaps and weakness of the existing planning process.
3.3.1 Analysis of Requirement of e-Governance

The government should first analyze its current structure and process of operation with citizen services requirements. It’s also urgent need at this stage that government will identify a mission for e-Governance and determines how the government will operate to accomplish its mission, and setting down the general operational requirements needed to achieve the mission (Staff Study of United States Accounting office, 1992).

3.3.2 Information Architecture

The complexities of information systems architecture can vastly different, but the analyses to determine for designing e-Governance’s information needs to carry out its mission and information system architecture can used to meet any information processing. Information system Architecture is generically designed so that it can be applied to any kinds of information system acquisition. For designing e-Governance information architecture should be consist (1) Identifying the mission (2) identifying the functions to be performed in carrying out that mission (3) Identifying information needed to perform those functions (4) Identifying information data needed to perform those functions (Staff Study of United States Accounting office, 1992).

Moreover, the information architecture establishes an overview of the inherent data structure and functional processes associated with an enterprise. It identifies the interaction between the public information processes and their information requirements and provides a basis for defining the databases and information systems for the government (Hywel et al., 1993).
3.3.3 Technological Adaptation in Government to provide Information to Citizen

It is very important at this stage that a proper e-governance system project requires creating a standardized IT infrastructure across the country. A study of Info Dev Report (2002) that all developing countries implementing e-Governance have struggled to develop a basic infrastructure to take advantage of new technologies and communications tools. Many developing countries, even if possessing the will, do not have the infrastructure necessary to immediately deploy e-Governance services throughout their nation.

For this instance the common functionalities of e-services should not be developed by individual agencies for the sake of their own services, but jointly with other agencies as a shared current e-Governance infrastructure. Specific projects should be launched to address each of these needs. Also, information on the sharable resources that are available at different agencies should be considered when defining concrete project implementation plans (Elsa et al., 2007).

3.3.4 Skill Enhancement in Government to Facilitate Interaction of Citizen

Planning for e-Governance involves identifying existing skill gaps to accomplish e-Governance projects and providing training to fill those gaps. Training of both IT and non-IT staff is required. IT staff should be trained in different technologies and tools adopted for e-Governance projects, whether such projects are carried out in-house or outsourced. Non-IT personnel require training in the use of different IT tools, products and systems that are needed to operate e-Governance services (Elsa et al. 2007). These skills are not only technological but also related with service capacity planning, citizen charter, Citizen
Relationship Management (CRM). Basically government has to be skilled enough to handle more citizen claims with shortest time interaction of citizen can be done through internet which is not only media, personal contact, telephone, postal mailing should have to maintain as an enhanced interaction in between government and citizen (Moshtaq, 2004).

3.3.5 Implementation of Plan

In this stage, the above plans for e-Governance and infrastructure will have to be implemented and managed effectively. The implementation plan requires the following criteria’s:

- Here the task is to put the policy and enacted legislation into practice, by designing and implementing the necessary organizational and technical infrastructure and work processes (Abhishek and Vikram, 2005).
- Government must support the cause and the efforts needed to implement the change.
- The user must be committed towards the implementation of the strategy.

3.4 Conclusion

E-Governance is a process that requires a sustained commitment of political will, resources and engagement among the government, private and public sectors. The aim of the present research is to increase an awareness of the critical process in IS and improve its practical implementation in government organizations through improved understanding. On the basis competitive intelligence methodology and ISP formulation for information system planning which emphasis on analyzing, designing, and developing open and flexible
information system architectures for e-Governance that can be used to meet information need or can be upgraded to future information needs.
CHAPTER 4

RESEARCH METHODOLOGY AND DATA ANALYSIS

4.1 Introduction

The main purpose of research methodology is to provide effective research with study results. It can be defined as procedures, ways, methods and techniques that are applied to capture and gather all relevant information for the research.

Neuman (1997) pointed “The Methodology refers to branch of philosophy that analysis the principle and procedures of an inquiry in a particular discipline.” According to Irny and Rose (2005) “Methodology is generally a guideline for solving a problem, with specific components such as phases, tasks, methods, techniques and tools.” Various methods can be adopted to gather information from a variety of source such as sampling, research and site visits, observation of the work environment, questionnaires, interviews, prototyping and joint requirement planning.

Not all the fact-finding methods are suitable to adopt. In this research the methods are selected based on the research purpose. The procedure that had been followed to accomplish is by first identifying the purpose of the dissertation and further moving into depth where the objectives, purpose, obstacles, benefits, suggestion and recommendation of e-Governance will be discovered.
4.2 Methodology for e-Governance in Bangladesh

The main purpose of research methodology is to provide a proper information system planning framework for e-Governance in Bangladesh to promote more efficient and effective governance, facilitate more accessible government services, and allow greater public access information. Moreover, this research is primarily deal eGovernance strategy formulation for re-invention of eGovernance in Bangladesh. To accomplish the research objectives, a step by step process is followed. The procedures that had been followed to accomplish the research is depicted in following figure 4.2. Various methods can be adopted to gather information from a variety of source such as sampling, research and site visits, observation of the work environment, questionnaires, interviews, prototyping and joint requirement planning.

The fact-finding techniques that have been selected for this research project are the interview and questionnaire methods. The research process starts with the identification of the research topic whereby a lot of study has been carried out to obtain enough information on the topic. A literature review was carried out to study of Information System Planning issues of e-Governance. The literature also looks into the current status of e-Governance of Bangladesh in as well as differences e-Governance strategies among the other countries such as Malaysia, India, Singapore and Canada.

After literature review, Interview and survey was carried out for data collection. Interview was conducted to SICT (Support to ICT Task Force Project), under the Ministry of
Planning, Government of Bangladesh. Survey questionnaire were distributed to government agency as well as to different kind of the public to know the public awareness, current status, opinion, requirements of e-Governance of Bangladesh. In particular, brief reviews of this research data analyzed on government publications, international publications, administration journals, books, periodicals and long list of web sites.
Figure 4.2 Overall Research Process
4.3 Qualitative Research

Qualitative research involves the use of qualitative data, such as interviews, documents, and participant observation data to understand and explain social phenomena. Qualitative researchers can be found in many disciplines and fields, using a variety of approaches, methods and techniques (Qualitative Research in Information Systems, 2007).

L.R. Gay (1996) defined that “Qualitative research is the collection and analysis of extensive narrative data in order to gain insights into a situation of interest not possible using other types of research”

4.4 Quantitative Research

The collection of numerical data to explain predict and or control phenomenal of interest is called quantitative Research (L.R.Gay and Peter, 1996).

All research (whether quantitative or qualitative) is based on some underlying assumptions about what constitutes 'valid' research and which research methods are appropriate.

![Epistemological Assumption of Quantitative and Qualitative Research](image_url)

Figure 4.4 Epistemological Assumption of Quantitative and Qualitative Research

(Source: Qualitative Research in Information Systems, 2007)
Figure 4.4 shows how, for qualitative research, the basic epistemological positions to choose from are threefold: positivist, interpretive, or critical. In the case of quantitative research, however, the interpretive and critical positions are not meaningful; only the positivist one is.

**Interpretive Research** studies generally attempt to understand phenomena and interpretive methods of research in IS are aimed at producing an understanding of the context of the information system, and the process whereby the information system influences and is influenced by the context.

**Critical Research** suppose that social reality is historical constituted and that is produced and reproduced by people and focus on the oppositions, conflicts and contradictions in contemporary society.

The positivist epistemology relies on a host of scientific methods that produce numerical and alphanumeric data. **Quantitative, Positivist Research** is set of methods and techniques that allow IS researchers to answer the research question about the interaction of humans and computers. These methods and techniques tend specialize in quantities in the sense that numbers come to represent values and levels of theoretical constructs and concepts and the explanation of the numbers is viewed as strong scientific evidence of how a phenomenon work. In Quantitative, Positivist Research, the presence of quantities is so predominant, that statistical tools and packages are an essential element in the research’s toolkit (Quantitative, Positivist Methods in Information System, 2007).
This research followed on quantitative research methods, quantitative research techniques, and modes of analyzing and interpreting quantitative data that emphasize on describing, understanding the Information System Planning framework for eGovernance of Bangladesh.

4.5 Data Collection

All the research methods discussed above use one or more techniques, methods for collecting empirical data. These techniques, methods range from interviews, observational techniques such as participant observation and fieldwork, through to archival research. Written data sources can include published and unpublished documents, company reports, memos, letters, email, newspaper articles and so forth.

Information System is a data-intensive activity; process must be developed to provide recurrent data that provides intimate knowledge of the actual situation. For each private or public area’s of interest, a data collection process must be designed and implementation which identifies (Bernard, 1993).

• Exactly what is required?
• Who owns the data?
• The frequency of collection, and
• The format of collection

In this research primary data was analyzed by conducting interviews and survey. All the respondents are expected to be aware of IT. Besides, in particular, brief reviews of this
research data analyzed on government publications, international publications, administration journals, books, periodicals and long list of web sites.

4.5.1 Interview

Interviewing is perhaps the most significant method to getting information from people. In order to detail a proposed framework of e-Governance, interview session was carried out to gather data and information. The summarized results of the interview are described in the following section. A set of interview questions (referred in appendix B) was prepared to ask for interviews. Interviews were conducted to SICT (Support to ICT Task Force Program project), under the Ministry of Planning, Government of Bangladesh.

4.5.2 Questionnaire

The next method was conducted to getting data through survey questionnaire (referred in Appendix C). The questionnaires were distributed to the government agencies as well as to different kind of people to obtain the feedback about e-application knowledge.

4.5.3 Document Review

Moreover, brief reviews of this research data was analyzed on the documents such as government publications, international public administration journals, books, articles, periodicals and long list of web sites.
4.6 Data Analysis and Discussion

4.6.1 Survey Questionnaires

Survey questionnaire (referred in Appendix C) was distributed to government agency (SICT) and as well as to different kind of people to obtain the feedback about e-application in Bangladesh. All the respondents are expected to be aware of ICT. Questionnaire was emphasized into three section, 1st section one to gather information about current status of e-government of Bangladesh. Then, section 2 was emphasized to gather information for suggestion from respondent. Finally section 3 to gather information from respondent’s opinion on the use of e-Governance applications.

4.6.2 The Sample Design Process

The sampling technique that was used to distribute is the convenience and purposive sampling. The convenience samples are opened to any employees who are willing to participate and purposive samples are to those individuals who appear knowledgeable and interested in the subject area. The target population of this research was too large for the researcher to attempt to survey. A small, but carefully chosen sample has been used to represent the population.

4.6.3 Sample Response Rate

Survey questions distributed about 521 people. Most of the respondent was well educated and aware of IT. After the researcher screened through respondent answer, 488
questionnaires are accepted and selected. Following table shows the distribution of questionnaire.

Table 4.6.3 Distribution of questionnaire

<table>
<thead>
<tr>
<th>Company</th>
<th>Frequency</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SICT</td>
<td>85</td>
<td>17.41</td>
</tr>
<tr>
<td>Telecom Company</td>
<td>65</td>
<td>13.31</td>
</tr>
<tr>
<td>IT Company</td>
<td>75</td>
<td>15.36</td>
</tr>
<tr>
<td>Others Company</td>
<td>151</td>
<td>30.94</td>
</tr>
<tr>
<td>University/Colleges</td>
<td>112</td>
<td>22.95</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>488</strong></td>
<td><strong>100.00</strong></td>
</tr>
</tbody>
</table>

Based on the survey questionnaire, the age group of respondent were 24.59% followed by 20 to 25 age group who were most of the student and Entry level in job. Most of the respondent’s were age between of 26 to 35(64.55%). And age group 36 to 40 respondent were 11.27%. In this study, only 2.05% respondent was above age of 40. Because of to get the data from more senior ranked people (above aged 40) was difficult to the researcher. Please refer to following table (4.6.3.1) and figure (4.6.3) on the feedback obtained from different age groups of respondent.
Table 4.6.3.1 Respondent’s Age

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Frequency</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age 20 to 25</td>
<td>120</td>
<td>24.59</td>
</tr>
<tr>
<td>Age 26 to 35</td>
<td>315</td>
<td>64.55</td>
</tr>
<tr>
<td>Age 36 to 40</td>
<td>55</td>
<td>11.27</td>
</tr>
<tr>
<td>Above 40</td>
<td>10</td>
<td>2.05</td>
</tr>
<tr>
<td>Total</td>
<td>488</td>
<td>100</td>
</tr>
</tbody>
</table>

Figure 4.6.3 Respondent’s Age Distribution.

Majority of the respondent has ICT facilities in their offices as well in residence and most of the respondents have Internet access either at home or in office.
Question: Do you use e-facilities from your government side?

Here 46.93% or 229 respondents agreed that they don’t use e-application, even though they have proper ICT facilities and currently Bangladesh government provides some e-facilities.

Table 4.6.3.2 E-Application User’s

<table>
<thead>
<tr>
<th>Using E-services</th>
<th>Frequency</th>
<th>Percentage (100)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>259</td>
<td>53.07</td>
</tr>
<tr>
<td>No</td>
<td>229</td>
<td>46.93</td>
</tr>
<tr>
<td>Total</td>
<td>488</td>
<td>100</td>
</tr>
</tbody>
</table>

Figure 4.6.3.1 Percentage of E-application user’s
Question: Do you know that the government has planned to implement an e-Governance where most of its information can be processed easily without having to go through much hassle?

The question was asked as to know how many respondents are aware about the e-government implementation. Following table (4.6.3.3) and figure (4.6.3.2) shows that 67.01% respondents knew that the government has plans to implement e-government. The rest of the respondents (32.99%) were ignored about the current e-Governance initiatives of Bangladesh government.

Table 4.6.3.3 Respondent’s awareness towards Government’s plan to implement eGovernance.

<table>
<thead>
<tr>
<th>Public Awareness on E-governance Plan</th>
<th>Frequency</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>327</td>
<td>67.01</td>
</tr>
<tr>
<td>No</td>
<td>161</td>
<td>32.99</td>
</tr>
<tr>
<td>Total</td>
<td>488</td>
<td>100</td>
</tr>
</tbody>
</table>
Figure 4.6.3.2 Respondent’s awareness towards Government’s plan to implement eGovernance.

Even though government provides a number of e-facilities to the society, but most of the people don’t use e-services (46.93%), in mentioned figure (4.6.3.1). Even, most of the respondents (32.99% in figure 4.6.3.2) were ignored about current eGovernance initiatives of Bangladesh Government. In such scenario, researcher suggests that government needs to more advertisement to tell the public on its initiative and the benefits of e-Governance applications. This will then increase the number of people knowing and using the e-governance applications. Besides, its urgent need for the government to ensure ICT infrastructure across the country to implement eGovernance successfully so that all of user can get e-facilities.
Question: How can e-Governance applications (e-services) help you? (1) Information Retrieval; (2) Banking; (3) Convenient (4) Save times; and (5) Others;

Base on the finding in this question, most of the respondents have pointed, reason of e-services to retrieve information, save time, Banking and others. Please refer following figure and table.

<table>
<thead>
<tr>
<th>Reason For e-services</th>
<th>Frequency</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information Retrieval</td>
<td>149</td>
<td>30.53</td>
</tr>
<tr>
<td>Banking</td>
<td>91</td>
<td>18.65</td>
</tr>
<tr>
<td>Convenient</td>
<td>50</td>
<td>10.24</td>
</tr>
<tr>
<td>Saves Times</td>
<td>141</td>
<td>28.89</td>
</tr>
<tr>
<td>Others</td>
<td>57</td>
<td>11.68</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>488</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Figure 4.6.3.3 Respondent’s reason for using e-services
Question: How information is the government website? (1) Good; (2) Poor; and (3) Excellent;

Based on the findings and analysis on the above question, the reason for the low utilization of current eGovernance isn’t informative. To compare the eGovernance web site is informative or not, 46.93% or 229 respondents said that the web site is poor, 42.83% or 209 respondents said that it is good and only 10.24 or 50% said it is excellent.

Table 4.6.3.5: Informative of current e-services

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor</td>
<td>229</td>
<td>46.93%</td>
</tr>
<tr>
<td>Good</td>
<td>209</td>
<td>42.83%</td>
</tr>
<tr>
<td>Excellent</td>
<td>50</td>
<td>10.24%</td>
</tr>
<tr>
<td>Total</td>
<td>488</td>
<td>100%</td>
</tr>
</tbody>
</table>

Figure 4.6.3.4 Informative of current e-services.
Based on the finding current e-services are informative or not, Researcher argues that there are urgent needs to government to make the e-services more informative. Moreover, government has to ensure regular updating eGovernance site, user friendly interface and interactive eGovernance site. Besides government must be emphasis to provide more e-services to the citizen. Where as a successful Singapore E-Citizen Portal (www.ecitizen.gov.sg) provides 1600 e-services pertaining to business, health, education, recreation, employment, family etc. Of this, 1300 e-services are completely transacted by citizens with government online.

Question: Suggest which area do you think that government should include for e-services?

This question was asked what respondent’s wants for e-services that government should give the priority to providing e-services. Here more of the respondents wanted payment services by online. Based on the finding the desired areas for e-services are highlighted in following table:

Table 4.6.3.6 Respondent’s request area’s for e-services

| * Paying bill such as tax, banking, water, electricity others necessary bill |
| * Education and training |
| * More Informative e-services |
| * Innovative business and SME’s |
| * E-transaction services |
Regarding, the respondents’ desired areas of e-transaction, the government can go further by providing more e-transaction that allow users to conduct transaction in online. These e-transactions offer a direct link to government service available at any time as well as must satisfy user reliability.

Question: What suggestions do you think that how Government has to improve for e-services to be more useful and accessible to you or success factors towards implement e-government? (1) Information Society for All; (2) Services to Citizens; (3) Cost Effectiveness; (4) To Provide Services in Rural Areas; (5) To Give Awareness to Public on the Service Provide; and (6) Others;

Here, respondents may choose more than one answer. Based on the finding the respondents suggested to improve e-services to be more useful and accessible are information society for all, service to citizen, to have more information kiosk in pubic area, to provide service to the rural area.
Table 4.6.3.7 Respondents’ Suggestion to success factors of e-services

<table>
<thead>
<tr>
<th>Success Factors</th>
<th>Frequency</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information Society For All</td>
<td>131</td>
<td>26.84</td>
</tr>
<tr>
<td>Services to Citizens</td>
<td>104</td>
<td>21.31</td>
</tr>
<tr>
<td>Cost Effectiveness</td>
<td>70</td>
<td>14.34</td>
</tr>
<tr>
<td>To provide services in rural areas</td>
<td>110</td>
<td>22.54</td>
</tr>
<tr>
<td>To give awareness to public on the service provided</td>
<td>53</td>
<td>10.86</td>
</tr>
<tr>
<td>Others</td>
<td>20</td>
<td>4.10</td>
</tr>
<tr>
<td>Total</td>
<td>488</td>
<td>100</td>
</tr>
</tbody>
</table>

Figure 4.6.3.5 Respondents’ Suggestion to success factors of e-services.
Based on that data 26.84% respondent suggested that the information society for all is the main success factors to implementing e-Governance. 22.54% respondent mentioned to provide services in the rural areas. Based on this analyzed data researcher emphasis that government should take necessary steps to provide e-services in the rural areas. As, currently most of the rural areas in Bangladesh haven’t proper ICT facilities, but majority of the people of Bangladesh live in rural areas. To ensure for all citizens have equal access to technology, government will be established Network kiosk throughout the country, even in rural areas, so that every citizen be able to find and receive information and services from different government organizations consistently and easily. The government should develop partnership with NGOs and the private sector to establish such network kiosks throughout the country as the fund of Bangladesh government is not sufficient to acquire technology for e-governance implementation (Bangladesh ICT Policy Monitor Network, 2007).

10.86% respondent emphasized to give awareness for using e-services. Even though currently Bangladesh government provides a number of e-services to the citizen, but most respondents (in Figure 4.6.3.1) don’t use these services in lack awareness and proper publicity. Awareness can be achieved by providing publicity or seminars. The researcher suggests that government needs actively marketing for e-government services. The marketing strategies include advertisement on media such television, radio, newspaper to tell the public on its initiative and the benefits of e-Governance applications.
Question: Please give your opinion on the response towards using e-Governance services of Bangladesh.

This section question was measured in 5 point scale: 1-poor, 2-fair, 3-satisfactory, 4- good and 5- excellent. Data summarized of this section described in following table.

Table 4.6.3.8 Citizens opinion on Current e-Governance

<table>
<thead>
<tr>
<th>Questions</th>
<th>Mean</th>
<th>Mode</th>
<th>Median</th>
</tr>
</thead>
<tbody>
<tr>
<td>e-Governance is more efficient compared to the traditional way of performing task</td>
<td>2.83</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>e-Governance is people oriented</td>
<td>2.42</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>e-Governance website is informative</td>
<td>2.66</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>e-Governance is cost effective</td>
<td>2.67</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>e-Governance is more reliable</td>
<td>2.69</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

These questions distributed to acquire a clear picture of what the respondents view were about current e-Governance application. These questions were emphasized in terms of criteria such as current e-services, reliability of e-Governance, whether e-Governance services are people- oriented or not and cost-effectiveness of e-government. Based on finding of question, Mode for all questions are 3(satisfactory). It is clear from the finding that government of Bangladesh will have to work hard for an effective e-Governance. It is therefore, important for the government to invest resources and introduce and implement more rigorous ICT policies to extend access to e-services thought out the country.
Researcher suggests e-Governance system should be reliable by providing security, privacy and identification of the data provided by its citizens. To ensure the people oriented of e-services, government should examine what people exactly want for e-Governance and expand the e-services to all kinds of the people. However, the citizen should utilize the services and have to provide feedback to the agencies for further improvement.

Question: Any other comments regarding ICT strategy implementation in Bangladesh Government?

Most of the respondent’s skipped this question. Here, mostly respondent argued that, government should take necessary steps to set up ICT infrastructure facilities across the nation. Based on the finding the respondent commends are noted in following table

Table 4.6.3.9 Respondents comments regarding ICT strategy issues on e-Governance.

<table>
<thead>
<tr>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>* To setup ICT infrastructure across the country</td>
</tr>
<tr>
<td>* Bangla interface instead of English language for e-services</td>
</tr>
<tr>
<td>* Government should provide awareness and publicity on the e-government services.</td>
</tr>
<tr>
<td>* Information society for all.</td>
</tr>
<tr>
<td>* Government should provide e-services to the rural people.</td>
</tr>
<tr>
<td>* Paying bill such as tax, banking, water, electricity others necessary bill</td>
</tr>
</tbody>
</table>

To ensure that all citizens have equal access to ICT, government have to expand locations where public can access information and obtain public services and establish a network of
kiosk or computer systems that provide government information and services in prominent locations in each state/division and broaden access to the rural communities. It’s needs to be placed where the public can use it in convenient community locations, such as libraries, post offices, banks, hospitals, and other government offices. For example, rural public libraries can be networked with main libraries to expand the services that are available to the public throughout the country (COMNET-IT, 2002)

4.6.4 Interviews

Interview was conducted to SICT (Support ICT task Force program project) under Ministry of Planning, Government of Bangladesh. The interview was requested to the respected employees, but two employees (One is Deputy Chief and project Head of SICT) and a programmer gave me chance to the interviews. In following the interview result are described.

Question: Does Bangladesh Government has a ICT planning policy?
If yes: (please describe briefly):

Here respondent’s mentioned:

The national ICT policy of 2002 gives due importance to the issue of e-government, declaring that “The government shall use ICT systems within the public administration to improve efficiency, reduce wastage of resources, enhance planning and raise the quality of services.” The policy further states that “The government shall implement ICT system to
provide nation-wide coverage and access by any citizen to the government databases and administrative systems which can be used to extend public services to the remotest corner.”

To achieve this goals set forth by the ICT policy, an ICT Task Force has been formed, with the Honorable Prime Minister as Chairperson and the Secretary of Ministry of Planning as Member Secretary. In 2003, the government launched the Support to ICT Task Force (SICT) program at the Ministry of Planning, with the mandate of providing administrative and secretarial supports to the ICT Task Force in designing, planning and implementing various ICT projects, particularly eGovernance.

Question 2: Is there an Information Technology component to Bangladesh Government’s for overall ICT planning policy? (No, Yes or in progress)

Against this question, respondent’s mentioned Bangladesh government has set up some specific technology which covers IS/IT planning policy. These are:

Table 4.6.4 ICT policy and action taken by government.

<table>
<thead>
<tr>
<th>ICT Policy</th>
<th>Action taken/Implementation Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICT Infrastructure in Government</td>
<td>* MoSICT has proposed a project to provide computers, IT human resources and broadband to 38 ministries</td>
</tr>
<tr>
<td></td>
<td>* SICT has taken up e-governance projects in 10 ministries</td>
</tr>
<tr>
<td></td>
<td>* PMO has established its own VSAT communication facility</td>
</tr>
<tr>
<td></td>
<td>* BCC has established its own VSAT and has provided broadband Internet to government, private and incubation center</td>
</tr>
<tr>
<td>Funding/Sustainability of e-Governance</td>
<td>* National ICT Policy mentions 2% for IT, but it is not implemented yet</td>
</tr>
<tr>
<td>--------------------------------------</td>
<td>---------------------------------------------------------------------</td>
</tr>
<tr>
<td>ICT infrastructure across the country</td>
<td>* Link with submarine Cable to be established by mid-2005</td>
</tr>
<tr>
<td></td>
<td>* DDN will connect entire country</td>
</tr>
<tr>
<td></td>
<td>* All analog systems have been converted to digital</td>
</tr>
<tr>
<td></td>
<td>* VoIP has been legalized in principle</td>
</tr>
<tr>
<td></td>
<td>* BCC has distributed computers and accessories to more than a thousand schools across the country, including training teachers</td>
</tr>
<tr>
<td>Public Access to ICT</td>
<td>*ICT Act to passed in parliament soon</td>
</tr>
<tr>
<td></td>
<td>*Cyber cafes are available in all major towns</td>
</tr>
<tr>
<td></td>
<td>* BTTB to introduce GSM to lower cost</td>
</tr>
<tr>
<td>Government shall implement wide-spread ICT System to provide nation wide coverage and access by any citizen to the government databases and administrative systems which can be used to extend public services to the remotest corner</td>
<td>* Many government offices has already built their own databases for internal use, but very few provides access to these databases to the public for increased transparency</td>
</tr>
<tr>
<td>All government must be networked to the National Data Resource Center in shortest possible time</td>
<td>* The National Data Resource Center has not been established yet, but SICT is taking steps towards that</td>
</tr>
</tbody>
</table>
Question: If any individual state/division agencies have overall ICT Planning, and is there an Information Technology component to them? (No, Yes or in progress)

Here respondent’s answered that The Rajshahi City Corporation (Under the Rajshahi division) has taken a landmark step in developing an Electrical Birth Registration System (EBRS) that provides citizens with a unique identity card that citizen can use for various services such as education, health care etc.

Moreover, in a Sylhet division, the SICT program has undertaken the task of automating some internal process, E-government System for Sylhet Divisional headquarter to improve its efficiency and transparency. Currently the Sylhet divisional Headquarter does not have adequate technical and financial resources to automate their internal process. For the smooth operation of the Sylhet Divisional Headquarter it requires constant interaction and information exchange among different government agencies. To overcome this problem, SICT has undertaken following task:

- Development of the database software for the Sylhet Divisional Headquarter to automate administrative, general, revenue, land acquisition, education and development related activities. Day to day activities of the different section/unit will also be automated to have better resource planning
- Development of the website of the Sylhet Divisional Headquarter to provide necessary information to citizens
- Integrated module will be developed to exchange information.

Question: Do Government agencies support sharing of information among the citizen and providing access to information?
Here respondents noted that currently Bangladesh government provides some e-services to the society. They mentioned following some successful project:

**Table 4.6.4.1 Some Successful e-services to the society.**

| 1. | Center for Environmental and Geographic services (CEGIS): |
| 2. | Hajj office under Ministry of Religious Affairs: |
| 3. | Process Automation at GM North’s Office under the Ministry of Post and Telecommunication |
| 4. | Online Daily Market Price for the ministry of Agriculture |
| 5. | Online public Exams Results and education statistics Under Ministry of Interactive website for Ministry of Expatriate Welfare and Overseas Employment |

Question: Please explain how feedback from citizen and end-users is incorporated into E-government facilities?

Respondents answered that although government provides some necessary e-services to citizens, but most of citizens are not used of these facilities properly in lack of proper awareness and publicity as well as still ICT infrastructure across the country is not in a suitable level.
Needs:

Question: Which major policy areas do you give priority for e-government and how?
(1) Competitiveness; (2) Economic growth; (3) Innovative business and SMEs; (4) Information society for all; (5) Education and training; (6) International cooperation; (7) Scientific and technological excellence; and (8) others (please specify):

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Here respondents answered that Information Society for all is the main target of current e-government initiative. They recommended fulfilling this facility by:

**Build Internet kiosks around the country:** As online e-Governance services become increasingly prevalent, it will be important to provide access to these services to citizens around the country. Building Internet kiosks for community access has been an effective model in other countries such as Cambodia, India, Pakistan, and Sri Lanka, where Internet penetration rates are low. The government should develop partnership with NGOs and the private sector to establish such kiosks.

**Create one-stop government portal:** The Government should create a one-stop governmental portal that is designed to serve the specific needs of citizens and businesses. While this is not a high-priority item for the present, it will become an important issue in the next few years as an increasing number of e-government services go online and a single entry-point to various services becomes increasingly needed. While the portal that is now touted as the national portal of Bangladesh provides a list of links to websites of different government offices (which is not comprehensive), the portal is not genuinely user-friendly
in assisting users to access necessary information and services. Some regional examples from which lessons can be drawn include: the Singaporean e-Citizen portal at http://www.ecitizen.gov.sg; the South Korean portal at http://www.egov.go.kr, which provides about 400 public services; and the Indian portal Called India Country Gateway at http://www.incg.org.in.

**Strengths, Weaknesses, Opportunities and Challenges:**

Question 8: What are the major to minor obstacle factors that affect to implement e-governance in Bangladesh? (To know to the obstacle/ drawbacks to implement ISP):

Here’s respondent’ focuses the ICT infrastructure is main obstacle factors for government. Moreover, they mentioned some other obstacles which are described in below:

1. Bangladesh lacks adequate ICT infrastructure. One of the main hindrances in this sector is that of lack of adequate planning and investments to develop ICT infrastructure and provide last mile solutions. To develop ICT infrastructure investment from private sector is still insignificant.

2. Inadequate access to electricity remains one of the biggest stumbling blocks to create a comprehensive ICT infrastructure.

3. There is relatively little online content in local language (Bangla), thus making the Internet only accessible to a limited section of the educated populace. Lack of
adequate ICT content in local language is another important factor for limited use of ICT applications.

4. Cost of Internet access

5. Much of the government IT training is isolated and project-based – a coordinated national effort to build ICT capacity in the government is yet to be implemented.

6. Policies and strategies of Bangladesh reflect that there is much scope for improvement regarding confidence and security issues of ICTs.

7. Lack of necessary legal and policy framework for ICT has impeded the growth of use of ICTs in the country.

8. Lack of ICT standards and common architecture for ICT systems has also created impediments.

9. E-Governance projects are taken up by different government bodies with little national-level coordination. But the implementation of these projects faces difficulties due to lack awareness about the benefit of ICT tools.

10. Most e-Governance activities are mainly project based and often face difficulty with sustainability when the project funding ends.
11. Due to lack of online payment system, B2C services are not yet widely popular.

Due to lack of adequate awareness about the benefits of ICTs, B2B services have not gained significant usability.

12. Absence of good incentive to attract high-level ICT professionals working in-country.

Question: What challenges need to be overcome to improve the effectiveness, efficiency and transparency of the Government ICT policy?

Respondents mentioned that, implementing Information System planning by government is always a challenging, and noted major challenges to be overcome, these are:

Table 4.6.4.2: Challenges need to be overcome

<p>| | |</p>
<table>
<thead>
<tr>
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<tbody>
<tr>
<td>1.</td>
<td>Build ICT infrastructure throughout the Nation</td>
</tr>
<tr>
<td>2.</td>
<td>Push for a comprehensive regulatory framework for e-Governance.</td>
</tr>
<tr>
<td>3.</td>
<td>Create and retain adequate IT human resources:</td>
</tr>
<tr>
<td>4.</td>
<td>Inadequate awareness,</td>
</tr>
<tr>
<td>5.</td>
<td>Explore scope of integration:</td>
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</tbody>
</table>
Question: Any final ideas or thoughts about how implement the e-governance successfully to enhance the effectiveness, efficiency and transparency to the public society?

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Here respondents answered that Bangladesh is behind most countries in Asia in terms of e-government, it has the advantage of being in a position to learn from the experience of, and mistakes made by, other countries and noted some strategic recommendations for an overall National ICT policy. These are:

4.6.4.3 Table: Recommendations e-Governance.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Consider public-private partnership-based e-government models</td>
</tr>
<tr>
<td>2</td>
<td>Collecting revenues from citizens/businesses for online e-government services</td>
</tr>
<tr>
<td>3</td>
<td>Organize marketing campaigns for available e-government services</td>
</tr>
<tr>
<td>4</td>
<td>Allow for decentralization of governance wherever possible and relevant</td>
</tr>
<tr>
<td>5</td>
<td>Build ICT infrastructure throughout the government</td>
</tr>
<tr>
<td>6</td>
<td>Improve ICT access by citizens</td>
</tr>
<tr>
<td>7</td>
<td>Emphasize Bangla interface for citizen services</td>
</tr>
</tbody>
</table>
4.7 Conclusion

It is clear from the finding that Bangladesh government will have to work hard for an effective e-Governance. Government has to identify and rectify the problem regarding e-Governance implementation. It is therefore, important for the government to invest resources and introduce and implement more rigorous ICT policies to extend access to e-services thought out the country.
CHAPTER 5
PROPOSED FRAMEWORK

5.1 Introduction

To full utilization of e-Governance in Bangladesh requires strong ICT infrastructure, leadership and vision. It also requires a comprehensive ICT strategy framework that is not only benchmarked on global best practices, but also sensitive to existing political and economic conditions/realities. This chapter proposed a conceptual research framework for e-Governance of Bangladesh to become efficient and effective governance which bringing the government closer to the citizens. This framework also addresses the information privacy, security, maintenance, and enabling environment issues to implement e-government.

Furthermore, in this chapter illustrates a Road Map of ICT strategy to re-invention of e-Governance of Bangladesh which articulates the government’s vision, targets, technical approach and standards for e-Governance system.

5.2 Identifying Factors for a Framework of eGovernance in Bangladesh

Through survey and interviews, Researcher gained a wide range of eGovernance factors to consider or propose the eGovernance framework in Bangladesh. Moreover, from literature review, previous journal data was analyzed to propose a developmental framework of eGovernance. In following, these factors are highlighted:
1) Bangladesh Government is ideally stepping into building information society and going for introducing electronic governance.

2) A major portion of respondent are ignored about eGovernance. Even though they are educated

3) Most of users don’t use the e-services. Even though they have ICT facilities.

4) Current eGovernance site is not informative. Most of user argued that current e-service is not people oriented. Government must consider the user requirements/feedback

5) **Inadequacy of ICT Infrastructure;** Bangladesh, as is in most of the least developed countries; Inadequacy of ICT infrastructure is a main problem across the country as well as government offices to implement e-Governance. According to Taifur (2006) Bangladesh has a very low level of internet and PC penetration standing at 0.04% and 0.09% respectively. There are no public places that allow access to the internet at low cost. Besides, the Government of Bangladesh can’t supply electricity across the whole country. According to Mahbubul (2007) only with 30% of the population of Bangladesh having access to electricity. In such scenario, it is matters of great concern how people would get G2C services even if government offered.

6) **Political Situation;** In Bangladesh, a country where technology acquisition raises a number of political questions. A survey of Chowdhury (2008) stated that one of the reason to failure of eGovernance in Bangladesh, because of poor internal political leadership also mentioned that political desire may not be enough to successfully
implement e-Governance. However, lack of political desire may work as high barrier to implement e-Governance.

7) **Economical Condition:** The economic/financial challenges are another major obstacle to implement eGoverance system in Bangladesh. Like other developing countries, Bangladesh government fund are not sufficient to acquire technology for e-Governance implementation (Bangladesh ICT Policy Monitor Network, 2007).

**5.3 Proposed Framework**

An effective e-Governance targets a wide range of topics, including infrastructure development, the legal environment surrounding e-Governance development, policies (national, regional, local), digital divide issues, literacy, education, accessibility, transparency, managing records, sustainability, public-private cooperation and partnerships etc. (Gronlund et al., 2006). An integrated approach of e-Governance framework for Bangladesh are demonstrated in following ways which emphasizes Infrastructure development issues, Application issues, Leadership & Organization issues, and Enabling Environment issues:
5.3.1 Infrastructure Development

Bangladesh, as is in most of the least developed countries, Inadequacy of ICT infrastructure is main challenge to implement e-Governance. Government, even if possessing the will,
does not have the infrastructure necessary to immediately deploy e-Governance services throughout country. To be successful, e-Governance need to have an IT infrastructure that is capable to support and enable the execution of e-Governance. An e-Governance infrastructure in general comprises network infrastructure, security infrastructure, application server environment, data and content management tools, application development tools, hardware and operating systems, and systems management platform (Christian et al., 2003). Technology adaptation as infrastructure development is beginning of the e-Governance.

To ensure that all citizens have equal access to technology, government have to establish the different access method such as network of kiosk, computer systems, remote access by cellular phones, satellite receivers, wireless technology etc. that provide Government information and services in prominent locations in each state/division of Bangladesh or broaden access to the rural communities so that public can access information and obtain public services. It’s urgent need for government to ensure the sufficient infrastructure in the rural areas. Most of the 64,000 villages in the country, home to 70% of the population, do not have Internet connectivity, even proper electricity or hard wired phone connections (Moshtaq, 2004). Therefore, proper ICT infrastructure needs to be placed where the public can use it in convenient community locations, such as libraries, post offices, banks, hospitals, and other government offices. For example, as rural public libraries can be networked with main libraries to expand the services that are available to the public throughout the country (COMNET-IT, 2002).

**Infrastructure Development Recommendation:**

- Develop projects that are compatible with the nation’s ICT infrastructure.
- Use public access kiosks and mobile centers as teledensity is low.
• Introduce telecom competition and lift regulations on wireless and other digital technologies to accelerate their deployment. Build on the micro enterprise model to bring connectivity to underserved areas and ensure sustainability.

• Consider the government’s current use of technology and learn from past successes and failures (Info Dev Report, 2002).

5.3.2 Determine Application & Database portfolio for e-Governance

5.3.2.1 Single, unified portal for information access to citizens

Still Bangladesh government hasn’t developed one-stop government portal. This is time for government to create a one-stop governmental portal and related applications that allow citizens to access government information in online. An informative website must offer a direct link to government services available at any time. Innovations such as citizen service portal of Singapore (www.ecitizen.gov.sg) which offers about 1,600 e-services pertaining to business, health, education, recreation, employment, and family etc. Among these services, 1,300 e-services are completely transacted by citizens with government (Patricia, 2003).

The full utilization and implementation of e-Governance requires three main application domains: (1) e-Administration; (2) e-Society and (3) e-Services/e-Citizens (Velentina, 2004).

**E-Administration:** for automation and computerization of administrative tasks and for realization of strategic connections among internal processes, departments and functions.
**E-Citizens and E-Services:** to realize connections and interrelationships among governments and citizens and to deliver automated services.

**E-Society:** to enable relationships and interactions beyond boundaries, among public agencies, private sector and civil community in general. These three application domains should be considered as overlapping and e-Governance can be found in the overlapping area of these three application domains.

![Figure 5.3.2.1 E-Governance Application Domains. (Source:Valentina, 2004)](image)

Moreover, the e-applications ensure and satisfy the following functions which customized according to the needs.
Table 5.3.2.1 Solutions Components and technology for eGovernance applications.

(Source: Atanu and Nitin, 2005)

<table>
<thead>
<tr>
<th>Solution Environment</th>
<th>Information Services</th>
<th>Transactional Services</th>
<th>Data mining and Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Single, unified portal for information access to citizens,</td>
<td>Messaging between heterogeneous systems collaboration across various stakeholders</td>
<td>Change management</td>
</tr>
<tr>
<td>Service</td>
<td>• Multilingual content Management.</td>
<td>• Data models and government record services</td>
<td>• Data integration</td>
</tr>
<tr>
<td></td>
<td>• Authentication and privacy</td>
<td>• Commonly used process patterns</td>
<td>• Data analysis</td>
</tr>
<tr>
<td></td>
<td>• Multi device access Management.</td>
<td>• Payment services</td>
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</table>

5.3. 2.2 Interact: Broadening Civic Participation to Government

Publish site, however rich is content, are just a first step. E-Governance has the potential to involve citizens in the governance process by engaging them in interaction with policymaker’s throughout the policy cycle and at the levels of government.

Interactive e-Governance work with basic functions like email contact information for government officials or feedback forms that allows users to submit comments. For an
interactive website, government can design an e-consultation site which allows citizens to set the agenda for the debate through e-petitioning. E-consultation is generally seen as the use of ICT-tools to involve citizens in finding solutions for social problems (Albert et al., 2009). The government ensures that its elected officials have a web site to communicate directly with their constituents. As result government can take into account the e-inputs of citizens into the decision-making process (UN E-Government Survey, 2008). As an example, the Beijing City Government website provides citizens with facilities such as government services, information on laws and regulations, a news center, links to other government departments and e-mail. The email section invites citizens to make suggestions about the e-government development, to complain about government services, or to report unsatisfactory government work. While it is simply a website with email communication and electronic forum functions, it facilitates two-way communication between the government and the public, which in turn opens up the possibility for knowledge exchange and management (Christian et al., 2003).

Figure 5.3.2.2 A public feedback mechanism for an interacting site.
Some Factors for a successful interacting site:

- Show citizen that their engagement matters, by informing them of outcomes of their online comments.
- Engage citizens collaboratively in the design phase.
- The government ensures that to take into account the e-inputs of citizens in order to decision making process. Beside the government informs its citizen on what decision has been taken based on consultation process.
- Break down complex policy issues into easy-to-understand components.
- Be proactive about soliciting participation; use traditional media to publish online consultations.
- Information can be internally tracked so the recipient of feedback is held accountable for processing.
- Information can be externally tracked so the feedback provider can follow-up on his/her inquiry.


5.3.2.3 Security and Privacy

Establishing security and trust will be one of the key success factors for the e-Governance services. Clients will need to be confident that a service is secure and that their privacy is being maintained. In following the component of security framework for e-Governance are described.
Table 5.3.2.3 Components of Security Framework

<table>
<thead>
<tr>
<th>Level</th>
<th>Component</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1</td>
<td>Effective User Registration</td>
</tr>
<tr>
<td>Level 2</td>
<td>Effective User Identification and Authentication</td>
</tr>
<tr>
<td>Level 3</td>
<td>Effective Access Control</td>
</tr>
<tr>
<td>Level 4</td>
<td>Effective User Access Management.</td>
</tr>
<tr>
<td>Level 5</td>
<td>Privacy and Confidentially</td>
</tr>
</tbody>
</table>

5.3.2.3.1 Effective User Registration

In this stage the process of registration by which a user gains a credential such as a username or digital certificate for subsequent authentication. This may require the user to present proof of real-world identity such as birth certificate, passport and/or proof of other attributes depending on the intended use of the credential (e.g. proof that an individual works for a particular organization). Registration can be associated with a real-world identity or can be anonymous or pseudonymous (Office of the E-envoy, 2002).

In some country such as Italy, Belgium, Finland, Australia adopted for e-governments service to its citizens and to protect electronic communications, it is imperative that it identifies each citizen uniquely; which brings the issue of UIN (Unique Identity Number). Such a UIN is needed to prove the involvement of a citizen in a particular transaction and to eliminate chances of repudiation. A UIN can be stored within the electronic certificate or outside the certificate on the chip depending on the implementation scheme (Amir et al., 2005). In contrast, Still Bangladesh could not develop an effective and completely reliable
method of uniquely identifying citizens (Farooq et al., 2004). At this time, it’s crucial for government that to make a unique identity number to identify the citizen. One of the most recent inspiring news that government take initiative to build up an effective and completely method of uniquely identifying the citizens. Already 70 million have been registered by the end of June 2008 (UNDP, 2008).

5.3.2.3.2 Effective User Identification and Authentication

After registration the clients will authenticate themselves to the system by the presentation of a credential, which, at this level, can be a username. Clients will demonstrate their right to that credential by presenting additional (non-public) information (for example, a password) or biometric measure(s). The system will authenticate users based on the validity of this credential/private information combination (Office of the E-envoy, 2002).

5.3.2.3.3 Effective Access Control

Access is only permitted to publicly available information and information pertaining to the client that has been collected in transactions up to registered and identified users for which the client is enrolled. Moreover, in this level government have to ensure the principles of the data protection and the permitted use of the credential client (Office of the E-envoy, 2002).

5.3.2.3.4 Effective User Access Management
In this level, mechanisms should be implemented to time-limit access to transactions based on a specific item of knowledge. For example, management of client access should ensure that passwords are periodically changed, and that client accounts are disabled after a defined period of disuse and/or after a specific date. In following an overall security architecture has illustrated.
Figure 5.3.2.3.4 A Security Architecture for e-Governance System. (Source: Cabinet office Report of UK Online, 2002)

In this Architecture, the government gateway is the focus for the interaction with the client. The government gateway holds an information store (containing information on each client) which used to:
• Support confirmation of the identity of a client requesting authentication.
• Identify those services for which the client is enrolled.
• Hold personalizes information for the client.
• Privacy and confidentiality must be ensured by the government gateway for the client, because the information provides the linkage between the requesting client and identifies recognized by the government back-office systems.

5.3.2.4 Privacy and Confidentially

Governments collect vast quantities of data through everyday e-services from their citizen and those databases will expand in size and detail. Protecting the privacy of citizens’ personal information stored on these databases while making effective use of the information contained in them is a vitally important issue, one which policymakers must address if citizens are asked to entrust sensitive personal, financial and medical data to the government in order to utilize Internet-based e-Governance systems (Info Dev Report, 2002). Privacy must be addressed in the planning and design of e-Governance systems since it is much harder to interject privacy protections after a system is built and have to ensure the limit access to personally identifiable information - do not automatically allow employees to tap into databases of personally identifiable information.
5.3.3 Leadership and Organization

5.3.3.1 Leadership

In order to achieve the e-Governance transformation, elected officials and administrators are needed at all levels of government who understand the technology and the policy goals and who will push reform. E-Governance requires strong political leadership in order to succeed. According to Hee (2007), numerous e-Governance projects in developing countries tend to fail because the political leaders do not have precise understanding on e-Governance or maintain continued concern from the beginning to the end of the project. Therefore, it is crucial to set relevant laws and regulations to institutionalize for leadership which will and interest early in his/her term so that that resources appropriate for the project can be allocated in a proper and timely way during implementation, preventing outside influences. A survey of Chowdhury (2008) stated that one of the reason to failure to e-Governance in Bangladesh, because of internal political leadership also mentioned that political desire may not be enough to successfully implement e-Governance. However, lack of political desire may work as high barrier to implement e-Governance

A leading player (organization, institution), which is able to understand the real costs and benefits of the project, to motivate, influence, include and support other organizations and institutions, is required. Leadership is necessary before, during and after project implementation. Before the project is initiated, leadership is needed in order to explain the concept, the model and create awareness; during the project, leadership is needed to manage change and support the project; and after the project, it is needed to pledge the required flexibility and adaptability of the initiative (Valentina, 2004). Top leadership can ensure the long-term commitment of resources and expertise and the cooperation of
disparate factions. Leadership can also articulate a unifying theme that can propel the e-government initiative through all the necessary steps (Info Dev Report, 2002).

5.3.3.2 Partnership and Collaboration

Collaboration and cooperation at local, regional and national levels, as well as between public and private organizations, are important elements in the e-Governance development process. Collaboration among government entities, private enterprises and NGOs can assist policymakers in crafting meaningful reforms and can expedite the implementation of e-government. As, Bangladesh government does not have adequate technical, managerial or financial resources to venture into e-Governance on its own. It’s vital that the Bangladesh government will have to explore new relationships among the government agencies as well as partnerships with the private sector and NGOs to ensure resources, skills and capabilities that the government lacks. For example, the ICT private sector is able to support government with technical skills and infrastructure; meanwhile, universities will provide the required staff, learning and training courses for government staff and citizens, and other governmental departments and agencies can contribute in data and information flow and knowledge sharing for problem solving of similar tasks or processes and so on (Valentina, 2004). Furthermore for collaboration government ensures the following initiatives (Info Dev Report, 2002):

- In the planning phase, establish a consultative process that includes opportunities to hear from and speak with business, NGO’s and other government agencies. Explain the goals of the e-governance initiative and solicit suggestions.
• Local champions will help projects succeed. To decrease disbelief in local communities, directly involve local leaders by making them representatives, and by teaching them IT skills they can pass on to their communities

• Create local ownership. In conjunction with the establishment of a local management committee or body, handover of e-Governance projects should occur as soon as possible

5.3.4 Enabling Environment Issues

The enabling environment includes the necessary environment to insure a successful implementation of e-Governance. In following some imperative enabling environmental issues are described for Bangladesh e-Governance.

5.3.4.1 Publicity and Awareness

For a successful e-Governance require good marketing to encourage citizens to make use of e-Governance services. People, especially if they are unfamiliar with technology, may be reluctant to try e-Governance services out of distrust or belief that online services will not meet their needs or due to lack of understanding of the technology. People must be indulged into using the e-services, provided, of course, that these services were designed with members of the public in mind (Info Dev Report, 2002).

Although Bangladesh government provides some necessary e-services to citizens, but most of citizens are not used this facilities properly in lack of proper awareness and publicity. In this scenario, government should be actively marketing its e-Governance
services. The marketing strategies include advertisement on television and radio, advertisement in airline magazine and newspaper. This is just to get the citizen and business to use its e-services.

5.3.4.2 Strategic Investment

Like other developing countries, Bangladesh government fund are not sufficient to acquire technology for e-governance implementation. Government must choose projects carefully in order to optimize their investment of time and resources. Projects should have clear value in terms of enhancing transparency, increasing citizen participation in the governance process, and saving money. Moreover, governments will need to prioritize some programs over others to maximize available funds in view of tightly limited resources. This will necessitate clear objectives for programs and a clear route to those objectives (Info Dev Report, 2002).

5.3.4.3 Training

Many e-Governance or computerization projects of Bangladesh government suffer gravely from lack of adequate training facilities. Training is of vital necessity in familiarizing users with e-Governance and breaking their fears (Mahbubul, 2007).

E-training supports e-Governance transformation, but e-Governance needed to have an integrated management system to form communities of interest to address key issues across the government and private sectors. E-training is a common infrastructure which could assist in the implementation of each e-Governance project. Governments needed to
communicate policies and provide training on new processes and procedures and IT skills that boost the success of e-Governance. E-training provides flexibility and useful for training both officials and citizens. A well developed training strategy is a key to success for project implementation. The scope of e-training planning focused on user education and training strategy, specifically: (a) organization: new roles, responsibilities and competencies; (b) process: business practices and associated operating principles; and (c) IT: understanding of and facility with any new package or system. The scope needed to be the development of training material, e-training user documentation, change communication, delivery of training, assessment of training, documentation of maintenance and post implementation support. The key concerns of the e-training programme would be identified according to the needs of the e-Governance project master plan, with e-training considered as a common e-Governance application (Asian Development Bank Institute Report, 2004).

5.3.4.4 Benchmarking

Governments must regularly evaluate the progress and effectiveness of their e-Governance investments to determine whether stated goals and objectives are being met on right time. According to Patricia (2003) benchmark is to measure the success, failure or progress of an e-government project. Benchmarks act as a “reality check” for managers and policy-makers to measure on a regular basis whether e-government projects are advancing, are sustainable and are delivering on what was promised. During data collection, most of the respondent mentioned eGovernment is not people oriented (Data analyzed in Previous Chapter). Hence, Benchmark is quite important issue to full utilization e-government in Bangladesh.
Benchmarks can include: number of agencies and functions online, reduction in average time for processing citizen requests or applications, reduction in number of complaints about the level and quality of government services, increased citizen participation in consultations and comment proceedings, lower costs to government in delivering services, and increased revenue (Patricia, 2003). In following some benchmarking recommendations are pointed (Info Dev report, 2002).

**Benchmarking Recommendations:**

- Create measurable goals during early planning stages.
- Conduct regular audits to ensure progress is being made to achieve stated goals.
- Review benchmarks regularly to ensure that accurate measures are appropriate for rapidly changing technology.
- Create a data collection system to support program operations and “before and after” surveys of knowledge, skills, and applications among participating organizations to assess program impact.

### 5.3.4.5 Digital Divide

The digital divide refers to the gap between individuals, households, businesses and geographic areas at different socio-economic levels with regard both to their opportunities to access information and communications technologies (ICTs) and to their use of the Internet for a wide variety of activities (Patricia, 2003).
As Information society for all is one of the major targets of Bangladesh government. Besides, most the respondent/citizen concentration was about e-services for rural people. Moreover, Bangladesh a country of 130 million people, most of the people lives in village. Hence, policy-makers should keep in mind that to bridge the digital divide through e-government, they must make e-Governance relevant to citizens. ICT is a powerful tool for improving the quality and efficiency of government services, such as health and education, especially in places where resources are scarce and geography is an obstacle for communication.

An exemplary illustration of how the digital divide can be bridged to benefit the rural poor is the Gyandoot Project in central India, where the Internet connected a remote part of India to the government and the services it provides such as agricultural produce rates, land records and grievance services are the most popular features of the kiosks. The installation of this kiosk is a low cost rural Intranet covering 31 village information kiosks in five blocks of the district. The entire network of 31 kiosks covers 311 Panchayats (village committees), over 600 villages, and a population of around half a million (nearly 50% of the entire district) (Patricia, 2003).

Another example by Jamaica government that Jamaica enlisted postal workers to teach customers basic computer skills like email, and also created computer labs in local libraries, with the goal of empowering the rural poor to explore opportunities beyond their small communities, including the opportunity for increased civic participation (Info Dev Report, 2002).
5.4 A Road Map ICT Strategy for E-Governance

A conceptual e-Governance framework is discussed in earlier which can clarify the concept of e-Governance that how government should move forward to implement eGovernance. In this section, researcher has illustrated a Road Map of ICT strategy to re-invention of e-governance of Bangladesh which articulates the government’s vision, targets, technical approach and standards for eGovernance systems

Table 5.4 Elements and Interactions of Road map of e-Governance. (Source: Dobrica, 2006)

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<thead>
<tr>
<th>Elements of Road Map of E-Governance</th>
<th>Perspective and focus</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td>1. Analysis of Requirements of E-Governance</td>
<td>Structure and process</td>
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<td>1.1 Current Capacity</td>
<td>Demand and Supply</td>
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<td>1.2 Tools and Techniques</td>
<td>Technology and adoption</td>
</tr>
<tr>
<td>1.3 Learning</td>
<td>Pilot and demonstration</td>
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<td>2. Articulation visions and defining policy</td>
<td>Strategies and Actions</td>
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<td>2.2 Strategies Plans, Policies</td>
<td>Inputs, process and outputs</td>
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<tr>
<td>3.2 Data and Security</td>
<td>Legacy and operations</td>
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<td>Internet(LAN, MAN, WAN, Wireless)</td>
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<td>4. Integrated services and Value chain</td>
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</tr>
<tr>
<td>5. Mobilizing resources for implementation</td>
<td>Small and limited project</td>
</tr>
<tr>
<td>6. Monitoring and Continuing Improvement</td>
<td>Portfolio management</td>
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</tbody>
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### 5.4.1 Analysis of Requirement of E-Governance

The government should first analyze its current structure and process of operation with citizen services requirements. The goal of analysis is to better understand an issue, including finding, collecting and structuring information about the interests of all kinds of citizen and proposals for possible solutions (Abhishek and Vikram, 2005). The
requirements of citizen services can be identified based on data analysis in previous chapter.

5.4.2 Articulating Vision and Defining Strategy

After analyzing requirements and justifying preparedness, the introducer of e-Governance should have to start in articulating visions and defining strategy and determine how the government will operate to accomplish its mission, and setting down the general operational requirements needed to achieve the mission. If the vision does not match with current situation then it should have to return back to comprehensive e-readiness program. Moreover, at this stage government has to formulate a long term vision with considering citizen immediate solution of their public services and securities (Dobrica, 2006).

5.4.3 Publish: Using ICT to Expand Access to Government Information and Building Infrastructure

Government of Bangladesh generates huge volumes of information, much of it potentially useful to individuals and businesses (Taifur, 2006). The Internet and other advanced communications technologies can bring this information quickly and more directly to citizens. “Publish” implementations of e-government diverge widely in their design and content, but developing nations generally can start the process of e-Governance by publishing government information online, beginning with rules and regulations, documents, and forms (Info Dev report, 2002). In this stage government ensure the applications and security and privacy for e-governance as well as allocate the proper ICT structure across the country.
Building Infrastructure: Government should have to think about proprietary solution for e-governance (Microsoft, SAP) verses open platform. More importantly keeping in consideration about the local language and user-friendly applications with intuitive solution may help government to define application architecture.

Networks will be established to allow access to government services from libraries, post offices, banks, hospitals and other public locations. The Government will coordinate the locations access, presentation methods, and sharing of resources. The key focus is to have citizens throughout the country, even in rural areas, be able to find and receive information and services from different government organizations consistently and easily. Expand locations where public can access information and obtain public services. To ensure that all citizens have equal access to technology

5.4.4 Integrated Value Chain

Government has to develop value chain of services they provides for the citizen and re-think about possession or opening for the private participation. The value chain integration with public and private may increase the overall economic efficiency of the country.

5.4.5 Mobilization of Resource for Implementation

Resource mobilization is not only government responsibility. Participation from donors and private should have to welcome by the government. Key issue in implementation is program should have small enough to scale and monitor, replication should have to be rapid
enough to visualize the greater benefits of e-Governance. A very large program with no immediate benefit will suffer the real implementation of e-governance project (Dobrica, 2006).

5.4.6 Monitoring and Continuing Improvement

The purpose of this phase is to continually check whether the policy, legislation and its implementation are producing the planned results. Government have to ensured that every program have to evaluate and monitored properly unless the overall reform program will fail to achieve its goal.

5.5 Conclusion

Benefiting from other countries’ experience, understanding their success and failures, and adapting that knowledge to the characteristics of one’s socio-economic environment will be vital to the future of eGovernance in Bangladesh. In this chapter, researcher demonstrated a conceptual eGovernance framework based on survey, interviews data and previous research which addressed the applications, infrastructure, information security and privacy and enabling environment issues for an effective eGovernance in Bangladesh. Moreover, the Road Map of ICT strategies to re-invention of e-Governance can fulfill the government vision, targets, technical approach and standards for e-Governance systems. In other words it is a comprehensive index of e-Governance framework with a roadmap ICT strategy for policy makers considering electronic government as a mechanism of reform.
This chapter introduces a prototype design of single unified e-Governance web portal and focuses various issues such as tools, methodology, interface design on the development of the web portal. This prototype can be used as a guide to develop a fully integrated e-Governance web portal in future.

6.2 Methodology and Tools Used

It is very crucial important to select appropriate methodology and proper tools to develop any information system. In this section in following illustrate the methodology and the tools used in the development of the prototype system.

6.2.1 Methodology

It is important to select the best methodology so that work can be carried out consistently. Also, a proper methodology reduces mistakes and shortcuts in developing system and ensures the fulfillment of user requirement for the system. The methodology that the researcher selected is a systematic approach to the system development that guides the work and influences the quality of system development. The methodology used to the system development is prototyping system life cycle. According to Simon et al. (2006) in
information system development a prototype is system or a partially complete system that is built quickly and explores some aspect of the system requirements and that is not intended as the final working system.

Prototyping is the process of building a model of a system. In terms of an information system, prototypes are employed to help system designers build an information system that intuitive and easy to manipulate for end users. Prototyping is an iterative process that is part of the analysis phase of the systems development life cycle (Prototyping, 2008).

This Prototype has been adopted with the following various reasons (Simon et al., 2006 and prototyping, 2008):

- **Improved and increased user involvement**: Prototyping requires user involvement and allows them to see and interact with a prototype allowing them to provide better and more complete feedback and specifications. The presence of the prototype being examined by the user prevents many misunderstandings and miscommunications that occur when each side believe the other understands what they said. Since users know the problem domain better than any one on the development team does, increased interaction can result in final product that has greater tangible and intangible quality. The final product is more likely to satisfy the users’ desire for look, feel and performance. Furthermore prototyping can improve the quality of requirements and specifications provided to developers. Because changes cost exponentially more to implement as they are detected later in
development, the early determination of what the user really wants can result in faster and less expensive software.

- Prototyping is an effective way of developing system user interface.
- A prototype may be constructed to determine whether a particular implementation platform can support certain processing requirements.
- A prototype might be concerned with determining the effectiveness of particular tools, a database management system (DBMS) or a communication infrastructure.
- Prototypes as an early demonstration of system that functionally help identify any misunderstanding between developer and clients.
- Client requirements that have been missed are identified.
- The feasibility and usefulness of the system can be tested, even though, by its nature, the prototype is incomplete.

The main stages in developing the prototype system are described in follows:

- Perform an initial analysis
- Define prototype objectives
- Specify prototype
- Construct prototype
- Evaluate prototype and recommended changes
6.2.1.1 Perform an Initial Analysis

This is first stage of the prototyping life cycle which focuses preliminary target for system development. All information development activity utilizes valuable resources. Embarking upon a prototyping exercise without some initial analysis is likely to result in an ill-focused and unstructured activity producing poorly designed application. At this stage, the researcher has analyzed citizen requirements and opportunities for designing e-government web portal.
6.2.1.2 Define Prototype Objectives

Prototyping should have clearly stated objectives. A prototyping exercise may involve many iterations, each iteration resulting in some improvement to the prototype. This may make it difficult for the participants in a prototyping exercise to determine if there is sufficient value to continue the prototyping. However, with clearly defined objectives it should be possible to decide if they have been achieved.

6.2.1.3 Specify Prototype

Although the prototype is not intended for extended operation it is important that it embodies the requisite behavior. It is almost certainly the case that the prototype will be subject to modification and this will be easier if the software is built according to sound design principles.

6.2.1.4 Construct Prototype

Since it is important that prototype development is rapid, the use of a rapid development environment is appropriate. For construct the prototype, open source platform (PHP, Mysql, and Apache) has been used.
6.2.1.5 Evaluate Prototype and Recommended Changes

The purpose of the prototype is to test or explore some aspects of the proposed system. The prototype should be evaluated with respect to the objectives identified at the beginning of the exercise. If the objectives have not been met, then the evaluation should specify modifications to the prototype so that it may achieve its objectives. The last three stages are repeated until the objectives of the prototyping exercise are achieved.

6.2.2 Tools

It is important to select proper tools for the development of the prototype system, as it would affect the effectiveness and efficiency of the system. To design the prototype the researcher used Open Source Platform such as PHP, Mysql, and Apache. Open source program has been chosen for following reasons:

- **It’s free:**

  The greatest thing about open source software is that it is free and available to the general public. Open source software cannot, by definition, require any sort of licensing or sales fees.

- **It’s cross –platform and technology –neutral:**

  By requiring open source software to be non-platform specific, the open source community has ensured that the programs are usable by virtually everyone. Moreover,
open source programs are not be dependant on any “individual technology or style of interface” and technology-neutral. As long as the software can run on more than one operating system, it meets the criterion.

- **It’s not restrict other software:**

  If an open source program is distributed along with other programs, those other programs may be open source or commercially in nature. This gives software developers maximum control and flexibility.

- **It’s embrace diversity:**

  Diversity of minds and cultures simply produces a better result. Open source programs cannot, by definition, discriminate against any person or group of persons, nor against any “field of endeavor.”

  Source (Elizabeth et al., and Michael 2005 and Open Source, 208)

*6.2.2.1 Apache*

For web server, in the system developed apache is used. Its main job is to parse any file requested by a browser and display the correct results according to the code within the file. Apache is quite powerful and can accomplish virtually any task as webmaster (Elizabeth, et al., 2005).
6.2.2.2 PHP

PHP is a widely-used server-side scripting language that is especially suited for web development which allows the website to be in dynamic. Another important reason to use PHP to design the system that PHP can be embedded into HTML (PHP, 2008).

It generally runs on a web server, taking PHP code as its input and creating web pages as output. It can be deployed on most web servers and on almost every operating system and platform free of charge and can be used with many relational database management systems (DBMS). PHP primarily acts as a filter, taking input from a file or stream containing text and/or PHP instructions and outputs another stream of data; most commonly the output will be HTML. It can automatically detect the language of the user. Moreover, Basic object-oriented programming functionality was added in PHP. Object handling completely rewritten for PHP 5 which expanding the feature set and enhancing performance (Elizabeth, et al., 2005 and PHP, 2008).

6.2.2.3 MySQL

MySQL is the database construct that enables PHP and Apache to work together to access and display data in a readable format to a browser. It is Structured Query Language server designed for heavy loads and processing of complex queries. As a relational database system, MySQL allows many different tables to be joined together for maximum efficiency and speed (Elizabeth et al., 2005).
6.3 Hardware and Software Requirements for the System

The basis software and hardware require for using the system are follows:

- 733 MHZ Pentium or higher
- 256 MB RAM
- Hard Disk Space
- Windows 2000, Windows XP, Win NT
- Apache
- MySQL
- PHP
- Internet Explorer.

6.4 Features and Components of the System

The system based on several modules or components so that the system is easy to manageable and it would be easy to develop the appropriate interface design for the system, based on the system components. In following are described the features of these modules of the system.
6.4.1 Home Module

This module explains in details of the site. Here user can find the user registration, admin area, e-services, feedback, news & events, ICT policy, various forms and also related information.

6.4.2 Administrator Module

This module for authentic administrator. It privileged to the administrator to manage and update the site easily. Further this module consist several components. In home component, administrator can update ICT policy, e-services, and related links. Second, in admin component, administrator can find out the feedback message from users and can deliver the feedback reply to respective users. Moreover in this component, administrator can update the current news and events which is displayed in home page. In user component, administrator can see the user of this site, update user accounts and also it allows the administrator to privilege the user. In final, the files component, the administrator can add online form for e-services.

6.4.3 Feedback Module

This is important module for an effective e-government site. Here user can give message about their requirements and related comments on e-government issues to the authority.
6.4.4 E-Services Module

This module provides various e-services to the citizen. Currently, this module provides agricultural, educational, tourism, birth registration, passport issues services to the citizen.

6.4.5 News & Events Module

Here viewers can see the latest and important news from the government side. This section also provides the important events and announcements.

6.4.6 Forms Online Module

This module provides various important forms such as passport issues form, tax return form, educational form, visa form, agricultural form for the citizen which can be downloading easily.
6.5 Structural Chart

Figure 6.5 Structural Chart of the System (part 1)
6.6 Data Dictionary of the System

A data dictionary is a "centralized repository of information about data such as meaning, relationships to other data, origin, usage, and format”. A DBMS (Data base Management system) should have a user accessible catalogue or data dictionary. The data dictionary is an organized listing of all data element that are pertinent to the system with precise, rigorous definitions so that both user and system analyst will have a common understanding of inputs, outputs components of stores and event intermediate calculation (Data Dictionary, 2008).
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<td>NOT</td>
</tr>
<tr>
<td>Status</td>
<td>Varchar</td>
<td>45</td>
<td></td>
<td>NOT</td>
</tr>
<tr>
<td>Date</td>
<td>Date</td>
<td></td>
<td></td>
<td>NOT</td>
</tr>
</tbody>
</table>

6.7 System Testing

Software testing is a process aimed at evaluating an attribute or capability of a program or system and determining that it meets its required results (Jiantao, 1999). The testing will be carried out when the system is complete, and is design to test whether the system performs according to user’s expectations. Software testing methods are traditionally divided into black box testing and white box testing. In recent years the term “Grey Box” testing has come into common usage. This involves having access to internal data structures and algorithms for purposes of designing the test cases. Testing can be done on the following levels:
• **Unit testing**: tests the minimal software component, or module. Each unit (basic component) of the software is tested to verify that the detailed design for the unit has been correctly implemented.

• **Integration testing**: exposes defects in the interfaces and interaction between integrated components (modules).

• **System testing**: tests a completely integrated system to verify that it meets its requirements.

• **System integration testing**: verifies that a system is integrated to any external or third party systems defined in the system requirements.

(Source: Software Testing, 2008)

6.7.1 *Black Box Testing*

Not based on any knowledge of internal design or code. It aims to test the functionality according to the requirements. Thus, the tester inputs data and only sees the output from the test object (Jiantao, 1999).

6.7.2 *White Box Testing*

Based on knowledge of the internal logic of an application’s code. It’s based on coverage of code statement, branches, paths and conditions (Jiantao, 1999).
### 6.7.3 Black Box Testing of the System

Table 6.7.3 Black Box Testing of the System

<table>
<thead>
<tr>
<th>Purpose</th>
<th>Test/data/input</th>
<th>Output</th>
<th>Behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test admin password</td>
<td>Input correct</td>
<td>Show administration center</td>
<td>Correct</td>
</tr>
<tr>
<td>Check</td>
<td>User name/password</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feed back</td>
<td>Input correct</td>
<td>Feedback send successfully</td>
<td>Correct</td>
</tr>
<tr>
<td>Check</td>
<td>Feedback message</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
6.8 Interface Design of the System

6.8.1 Main Window

Figure 6.8.1 Main page
6.8.2 Administration Center Window

Figure 6.8.2 Administration Area.
6.8.3 User Registration Window

Figure 6.8.3 User Registration Window
6.8.4 News & Events Window

Figure 6.8.4 News & Events Window
6.8.5 Feedback Window

![Feedback Window]

Figure 6.8.5 Feedback Window
**6.8.6 ICT Policy Window**

**Figure 6.8.6 ICT Policy Window**

1. **Preamble**

1.1 Information and Communication Technology (ICT) encompasses the broad fields of data/information processing, transmission and communication by means of computer and telecommunication techniques, and these modern tools are increasingly used for organizational/personal information processing in all sectors of economy and society. This document presents the policy guidelines for the development of the ICT sector in Bangladesh.

1.2 A dependable information system is essential for efficient management and operation of the public and private sectors. But there is a shortage of locally generated information needed for efficient performance of these sectors. In order to meet this objective, ICT usage in every sector shall have to be accelerated in terms of information generation, utilization and applications. Considering the gravity and importance of ICT, Prime Minister has allocated dedicated ICT as the thrust sector.

1.3 Over the last few years, many nations have taken advantage of the opportunities afforded by ICT within a policy framework. India, for example, has procured guidelines and proceeded with the formulation of a national ICT strategy as part of the overall national development plan. Bangladesh intends to use ICT as the key driving element for socio-economic development.

2. **Vision and Objectives**

2.1 Vision

This policy aims at building an ICT-driven nation comprising of knowledge-based society by the year 2020. In view of this, a country-wide ICT infrastructure will be developed to ensure access to information by every citizen to facilitate empowerment of people and enhance democratic values and norms for sustainable economic development by using the infrastructure for human resources development, governance, e-commerce, banking, public utilities services and all sorts of in-line ICT-enabled services.
6.8.7 E-Services Window

Figure 6.8.7 E-Services Window
6.8.8 Birth Registration Window

Figure 6.8.8 Birth Registration Window
6.8.9 Passport Issues Window

Figure 6.8.9 Passport Issues Window
6.9 Conclusion

To design the system researcher had tried best to take the consideration of user requirements. Currently this portal provides news & Events, download facilities of various essential form, ICT policy of government, feedback, administration center and various e-services such as agriculture, tourism, education, birth registration, passport issues to the citizen. There is still room for enhancement. In future more e-services and relevant application for to access information would be included to fulfill the citizen requirements and target the e-Governance vision.
Chapter 7

Recommendation and Conclusion Remarks

7.1 Introduction

Bangladesh as an underdeveloped country is facing vast challenges while implementing e-Governance. Political, social, economical, technological aspects are the sectors where government is facing most troubles. However, government is gaining some unsatisfactory progress by initiating some programs. An effective e-Governance is attributed to ensure accountability, transparency, efficiency, empowerment, participation, sustainability, equity and justice. To formulate strategies to re-invent these attributes of governance using ICT in the form of e-Governance, recommendations are:

7.2 Build ICT Infrastructure across the Nation

This is perhaps most obvious for Bangladesh government to build up ICT infrastructure across the nation. E-Governance can be expanded if there is an adequate level of ICT infrastructure throughout the government as well as across the country. To ensure for all citizens have equal access to technology, government will be established Network kiosk throughout the country, even in rural areas, so that every citizen be able to find and receive information and services from different government organizations consistently and easily. The government should develop partnership with NGOs and the private sector to establish such network kiosks throughout the country.
7.3 Regulatory Framework

The regulatory/legal framework in Bangladesh has not yet been modernized to accommodate the growing needs of the electronic world. Still, in government offices, e-mail has no official value and cannot be legally considered as an acceptable mode of communication (Mahbubul, 2007). Government have ensure a regulatory framework which includes the necessary changes in legislation, rules, regulations to accommodate the usage of e-Governance, e.g. the use of electronic document, electronic transaction etc (Taifur, 2006). Moreover, there is a further need for an Electronic Certification Authority designated by the government, which should have the authority to provide electronic certification to organizations and individuals and cyber-terrorism laws that protect against unauthorized hacking; and laws to enable electronic authentication (Farooq et al., 2004).

7.4 Consider Public-Private Partnership-Based e-Governance Models

Bangladesh government does not have adequate technical, managerial or financial resources to venture into e-Governance on its own. For sustainability and strategic planning of e-Governance, it is vital that the government partners with the private sector. Such partnerships may contribute in the following areas (Farooq et al., 2004):

- Needs assessment studies and feasibility studies for e-Governance projects.
- Preparing plans for systems integration when different government offices need to interact and share information and resources.
• Designing an architecture for e-Governance to ensure interoperability, scalability, and robustness.
• Creating software applications.
• Maintaining and updating ICT systems.

7.5 Emphasize Bangla Interface for Citizen Services

An important lesson from the survey that, a common problem with citizen centered e-Governance services in Bangladesh is that they are almost all in English. While business services may be in English, most citizen services should have Bangla interface as a matter of policy since a vast majority of the population is still not comfortable with English. Taifur (2006) has noted to ease the use of Bangla in electric formats; there should be some kind of standardization of fronts that maintain international UNICODE standards for effective e-services.

7.6 Collecting Revenues from Citizens/Businesses for e-Governance Services

Like other developing countries, Bangladesh government fund are not sufficient to acquire technology for e-governance implementation. In this scenario, government should collect revenues from citizens/organization. According to (Farooq et al., 2004), most countries that are seriously pursuing e-Governance have partnered with the private sector to share the costs of starting and running e-Governance projects. For example, the Indian Customs and Excise Department has outsourced the computerization of “courier clearances” to a private company, which collects revenue by charging a fixed sum for every document filed. Also,
the government of Andhra Pradesh, in India has gone a step further by forming a separate independent company in joint venture with a private company to maintain the government’s portal, which provides various services for business and citizens. The new company has created its own business model by collecting revenues from the users of the portal.

7.7 Organize Marketing Campaigns for Available e-Governance Services

At present the government is especially weak in marketing. In recent years, it has set up several useful websites that provide services to citizens and businesses; however, they are not widely known to the public. The Government should undertake marketing campaigns to make the public more aware of the existence and usefulness of these websites.

7.8 E-Literacy

Still, Most of the people in Bangladesh are unable to make use of information and communication technologies because they are not ‘e-literate.’ e-Governance programs will have to take special steps to include people who are not e-literate.

7.9 Establish an E-Procurement (eP) System in Bangladesh

Online procurement systems are one of the most popular eGovernance initiatives in neighboring countries to address corruption and lack of transparency in government procurement. Such as Malaysia’s eProcurement system, known as e-Prohelan, has over 4,000 government procurement points and over 30,000 suppliers registered with the system
which can be accessed at http://www.eperolehan.com.my. It provides easy procedures for comparing quotations and specification of goods and services offered. Besides accountability and transparency, other benefits of e-Prohelan include increased efficiency, reduced time for processing, and reduced operational costs due to electronic retrieval and submission of quotations (INTAN Report, 2007). Similarly, Hong Kong has created an Electronic Tendering System (ETS). Korea’s e-Procurement System at http://www.g2b.go.kr, which covers the entire procurement process from tendering to payment, has yielded savings of millions of dollars to the government. Singapore’s e-Procurement System, called the Government Electronic Business at: http://www.gebiz.gov.sg has gained instant popularity for its easy-to-use features (Farooq et al., 2004). Bangladesh government should take similar steps to establish an eProcurement(eP) system to increase transparency, reduce corruption, and minimize the time and cost of processing tenders.

7.10 Create One-Stop Government Portal

The Government can go further to create a one-stop governmental portal that is designed to serve the specific needs of citizens and businesses. While the portal that is now touted as the national portal of Bangladesh provides a list of links to websites of different government offices (which is not comprehensive), the portal is not genuinely user-friendly in assisting users to access necessary information and services. Some regional examples from which lessons can be drawn include: the Singaporean e-Citizen portal at http://www.ecitizen.gov.sg; which enables citizens to ask questions and receive answers, and provides 1600 e-services pertaining to business, health, education, recreation, employment, family etc. Of this, 1300 e-services are completely transacted by citizens with
government online (Patricia, 2003). Also the South Korean portal at http://www.egov.go.kr, and The Indian portal called India Country Gateway at http://www.incg.org.in, may be a good example.

7.11 Allow for Decentralization of Governance wherever Possible and Relevant

According to Farooq et al., (2004) one of the limitations of the present government system of Bangladesh is that it is overly centralized. Many government officers and offices have an insufficient amount of work and responsibilities. E-Governance allows for decentralization of governance through easy sharing of relevant information and documents. The Government should give serious consideration to e-Governance projects that facilitate greater decentralization of governance and empower subsidiary government offices.

7.12 Make Plans for Reliable Maintenance and Updating Data base

There should be process to have 24 hr., and immediate maintenance, without which critical e-Governance projects should be undertaken. It is also important to maintain confidence of users. The maintenance work should be ideally outsourced since the current government structure does not allow internal IT maintenance team (Taifur, 2006).

There should be also process for a regular updating of data since almost all e-Governance projects involve the storage and retrieval huge amounts of data.
7.13 Explore Scope of Integration

Another significant constraint facing the Government of Bangladesh is lack of integration among different government offices. This result in duplication of effort and resources, or loss of important lessons learned from experience due to inadequate documentation. E-Governance allows for digital storage and retrieval of data that can be shared by all relevant government offices. For example, the Ministry of Planning and the Ministry of Finance work closely in making budgetary allocations to projects. With integrated databases accessible to officials from both ministries, decision-making has become more efficient than before. Given this experience, in planning e-Governance strategies the Government should seriously explore opportunities for better integration and sharing of resources and knowledge among related government offices for an effective and transparent governance (Farooq et al., 2004)

7.14 Invest in Reliable Supply of Electricity

Still Bangladesh Government can’t establish electricity throughout the country. There urgent need to adopt steps to explore alternative source of power or alternative means of power of generation. Different developing countries are experimenting with solar power, bicycle-generated power etc. Bangladesh should also take similar steps (Taifur, 2006).
7.15 Appoint GCIO

To create ownership and accountability structure for e-Governance project, an interested mid-to-high level government official in a particular office should be appointed as GCIO (Government Chief Information Officer) of that office. Government also strengthens GCIOs authorities by law. Promoting ICT cooperation in economic development programs is a very challenging task for Bangladesh government. In fact, there is a trend for the creation of a central agency to coordinate technology issues across the government and to acquire high level government-support programs. To fulfill these responsibilities the GCIO to create good relationship with top leaders who have great influence on the ICT strategies (Nguyen, 2008). It will be also responsibility of the GCIO to make plans for integration of ICT into the activities of that office and promote e-Governance. In many Asian countries such as Thailand, Japan and Malaysia, the concept of CIO in government has been internalized and their responsibilities made mandatory. They go through a different kind of more rigorous IT training. In Japan, inter ministerial CIO council was formed, which meets regularly to discuss issues of e-Governance implementation. In Thailand also, CIO’s are required to meet to regularly and a regular CIO award is given by government gets much highlighted in media (Taifur, 2006).

7.16 Accept Failure, Learn, and Move on

It is common for e-Governance projects to fail in meeting all their goals satisfactorily, especially in the initial stages of transition. A study of Farooq et al. (2004) noted that even India has a high rate of failure in e-Governance projects. If projects do fail, there is no reason to think that e-Governance will not work for Bangladesh or that popular attitudes,
the administrative framework, or the political structure are not yet amenable for e-Governance. It is important to learn well from failed projects and not repeat the same mistakes in the future.

7.17 Accessibility

Governments must serve all kind of people of society irrespective of their physical capabilities. E-services will have to be designed with appropriate interfaces – this may have significant cost implications. In Bangladesh has a sizable disabled population. These people could especially benefit from e-Governance services as they may not be able to travel to government offices. However, e-Governance projects need to accommodate the needs of the disabled – such as those who are blind, or don’t have use of their hands

7.18 Civic Engagement

The success of e-Governance initiatives depends on an engaged citizenry and, to that end, efforts to encourage civic engagement are more vital. The concept of e-Governance revolves around the citizen. According to Info Dev report (2002) e-Governance is not just a cost cutting or efficiency initiative, but rather is directed at bettering the lives of ordinary people. In order to develop this citizen focused vision, policymakers must keep the ordinary citizen in mind when designing e-Governance systems. If at all possible, policy makers and designers should encourage stakeholders – both government and nongovernmental– to participate in defining what their shared vision of e-Governance should accomplish.
7.19 Give Importance for Regular Training

Many e-governance or computerization projects suffer gravely from lack of adequate training facilities (Mahbubul, 2007). Training is of vital necessity in familiarizing users with computers and breaking their fears.

7.20 Set up an e-Governance Resource Center

To set up an e-Governance Resource Center is more important need for Bangladesh government that would serve as a think tank and policy research organization on e-Governance. The Center should include representatives from the government, the private sector, and the academic community. Its responsibilities may include (Farooq et al., 2004):

- Conducting Research on e-Governance, related issues.
- Monitoring e-Governance initiatives in the country, evaluating progress, and recommending actions.
- Keeping track of best practices around the world.
- Developing plans for e-Governance technological architecture and choice of technology based on international benchmarks.
- Conducting needs assessments for e-Governance strategy in different government offices.
- Serving as a meeting place and repository of information for government chief information officers (GCIOs).
- Evaluating partnership models and e-government project proposals from the private sector.
Challenges and complexities of Bangladesh gradually increased in the new millennium for globalization to implement eGovernance successfully. In this research, a brief study of current status of e-governance in Bangladesh was carried out to achieve the research objective which come out that government has launched some e-services to the citizen. However the serious issues such as inadequacy ICT infrastructure, misleading of administration, lack of finance, unstable political condition, low-reliability of Internet access, insufficient electricity across the country etc are major challenges to implement eGovernance successfully. To incorporate the research objectives, the researcher demonstrated a conceptual eGovernance framework based on survey, interviews data and previous research which addressed the applications, infrastructure, information security and privacy and enabling environment issues for an effective eGovernance in Bangladesh.

This research provided a competitive intelligence methodology for information system planning which emphasis on analyzing, designing, and developing open and flexible information system architectures for eGovernance that can be used to meet information need or can be upgraded to future information needs.

Moreover, in this research developed a prototype design of single unified e-governance web portal to support the research objective. This prototype can be used as a guide to develop a fully integrated eGovernance web portal in future.
Furthermore, in this research illustrated a Road Map of ICT strategy to re-invention of e-Governance of Bangladesh which articulates the government’s vision, targets, technical approach and standards for eGovernance systems.

While the Government of Bangladesh is behind most countries in Asia in terms of eGovernance, it has the advantage of being in a position to learn from the experience of, and mistakes made by, other countries.
REFERENCES


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Available: http://www.ece.cmu.edu/~koopman/des_s99/sw_testing


At: http://www.cabinetoffice.gov.uk/csia/information_for_the_public_sector


**APPENDIX A**

**LIST OF ACRONYMS AND ABBREVIATIONS**

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
</tr>
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<tbody>
<tr>
<td>ADB</td>
<td>Asian Development Bank</td>
</tr>
<tr>
<td>BCC</td>
<td>Bangladesh Computer Council</td>
</tr>
<tr>
<td>BTTB</td>
<td>Bangladesh Telegraph and Telephone Board</td>
</tr>
<tr>
<td>CEGIS</td>
<td>Environmental and geographic Information Services (CEGIS)</td>
</tr>
<tr>
<td>CSCs</td>
<td>Common Service Centres</td>
</tr>
<tr>
<td>DBMS</td>
<td>Data Base Management System</td>
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<tr>
<td>IS</td>
<td>Information System</td>
</tr>
<tr>
<td>IT</td>
<td>Information Technology</td>
</tr>
<tr>
<td>eP</td>
<td>Electronic Procurement</td>
</tr>
<tr>
<td>GCIO</td>
<td>Government Chief Information Officer</td>
</tr>
<tr>
<td>Govt</td>
<td>Government</td>
</tr>
<tr>
<td>G2B</td>
<td>Government-to-Business</td>
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<tr>
<td>G2C</td>
<td>Government-to-Citizen</td>
</tr>
<tr>
<td>G2E</td>
<td>Government-to-Employee</td>
</tr>
<tr>
<td>G2G</td>
<td>Government-to-Government</td>
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<tr>
<td>GIS</td>
<td>Geographic Information System</td>
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<tr>
<td>GSM</td>
<td>Global System For Mobile</td>
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<tr>
<td>GOB</td>
<td>Government of Bangladesh</td>
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<tr>
<td>Acronym</td>
<td>Description</td>
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</tr>
<tr>
<td>HTML</td>
<td>Hyper Text Markup Language</td>
</tr>
<tr>
<td>ICT</td>
<td>Information and Communication Technology</td>
</tr>
<tr>
<td>ISP</td>
<td>Information System Planning</td>
</tr>
<tr>
<td>MoSICT</td>
<td>Ministry of Science and Information and Communications Technology</td>
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<tr>
<td>NITA</td>
<td>National IT Agenda</td>
</tr>
<tr>
<td>NITC</td>
<td>The National IT Council</td>
</tr>
<tr>
<td>PHP</td>
<td>Hypertext Preprocessor</td>
</tr>
<tr>
<td>PK</td>
<td>Primary Key</td>
</tr>
<tr>
<td>PMO</td>
<td>Prime Minister's Office</td>
</tr>
<tr>
<td>SICT</td>
<td>Support to ICT Task Force</td>
</tr>
<tr>
<td>SISP</td>
<td>Strategic Information System Planning</td>
</tr>
<tr>
<td>SME's</td>
<td>Small Medium Entrepreneur’s</td>
</tr>
<tr>
<td>UIN</td>
<td>Unique Identity Number</td>
</tr>
<tr>
<td>UNDP</td>
<td>United Nations Development Program</td>
</tr>
<tr>
<td>UNICEF</td>
<td>United Nations Children's Fund</td>
</tr>
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</table>
APPENDIX B

INTERVIEW QUESTIONS

**Interview Questions:**

These interview questions are consist three section, section-1: Current issues of IS/IT strategies of Bangladesh government, section-2: Needs and section-3 Strengths, Weaknesses, Opportunities and Challenges.

**Please provide a few details about your self:**

1.1) Name:

1.2) Position:

1.3) Organization:

1.4) Your main activities or functions:

Please answer the following questions about IS/IT strategies of Bangladesh government:

**Question 1:** Does Bangladesh Government has a ICT planning policy?

*If yes: (please describe briefly):*

**Question 2:** Is there an Information Technology component to Bangladesh Government’s for overall ICT planning policy? (No, Yes or in progress)

**Question 3:** If any individual state/division agencies have overall ICT Planning, and is there an Information Technology component to them? (No, Yes or in progress)
Question 4: Do Government agency support sharing of information among the citizen and providing access to information?

Question 5: Please explain how feedback from citizen and end-users is incorporated into E-Governance facilities?

Needs:

Question 6: Which major policy areas do you give priority for e-governance and how? Key in YES to as many as are relevant, and add any useful text comments: (To know in which areas have to emphasis/ priority for IS planning)

1. Competitiveness:
2. Economic growth:
3. Innovative business and SMEs:
4. Information society for all:
5. Education and training:
6. International cooperation:
7. Scientific and technological excellence:
8. Others (please specify):

Strengths, Weaknesses, Opportunities and Challenges:

Question 7: How effective, efficient and transparent is Bangladesh Government ICT policy for public society? (To know the exiting ICT strategies efficiency, effectiveness)
**Question 8:** What are the major to minor obstacle factors that affect to implement e-governance in Bangladesh?

------------------------------------------------------------------------------------------------------------------

**Question 9:** What challenges need to be overcome to improve the effectiveness, efficiency and transparency of the government ICT policy?

------------------------------------------------------------------------------------------------------------------

**Question 10:** What is the future plan towards e-Governance? *(To know future trend of ICT strategies for government)*

------------------------------------------------------------------------------------------------------------------

**Question 11:** Any final ideas or thoughts about how implement the e-Governance successfully to enhance the effectiveness, efficiency and transparency to the public society?

------------------------------------------------------------------------------------------------------------------

Thank you
APPENDIX C
SURVEY QUESTIONNAIRE

Questionnaire for Survey:

Dear respondent, I am pursuing master in computer science at University of Malaya by full
dissertation, under title of “An Information System Planning Framework for E-
Governance in Bangladesh”. Below is the survey questionnaire to collect the relevant
data. I would be grateful, if you would provide any comments and suggestions which carry
out my research work. Thank you for your precious time.

Respondent details:

Name:

Organization:

Position:

Question 1: What age group are you?

☐ 20-25

☐ 26-35

☐ 36-40

☐ above
Question 2: Do you use the E-facilities from your government side?

☐ Yes

☐ No

Question 3: For what reason do you use e-facilities?

☐ Information retrieval

☐ Banking

☐ Payment

☐ Others (Please specify---------------------------------------------------------------)

Question 4: Do you know that the government has planned to implement an E-governance where most of its information can be processed easily without having to go through much hassle?

☐ Yes

☐ No

Please choose the best relate to e-Governance:

Question 5: How can e-Governance applications (e-services) help you?

☐ Convenient

☐ Retrieve Information

☐ Save time

☐ Others
**Question 6:** How information is in the website of e-governance?

- □ Excellent
- □ Good
- □ Poor

**Suggestion:**

**Question 7:** Suggest which area do you think that government should include for e-services?

**Question 8:** What suggestions do you think that government has to improve for e-services to be more useful and accessible to you?

- □ To have more information kiosk in public areas
- □ To give awareness to public on the service provided
- □ To provide service to the rural area (such as computer and internet services)
- □ To advertise on e-govt program often
- □ To have e-govt seminars (or talks) in public areas
- □ Others (Please specify---------------------------)
Opinions:

**Question 9:** What kinds of information from government side would help you do your daily activities more effectively?

**Question 10:** Please choose one answer towards the main success of e-Governance implementation programs?

- Legislative requirement
- Others
- Information Society for all
- Cost effectiveness
- Service to citizens
- Others (Please specify-------------------------)

**Question 11:** Please give your opinion on the response towards using e-Governance services of Bangladesh. (Indicate to what extend you agree to the following statements. Please circle **ONE** answer for each statement)

<table>
<thead>
<tr>
<th>Do you agree that:</th>
<th>Poor</th>
<th>Fair</th>
<th>Satisfactory</th>
<th>Good</th>
<th>Excellent</th>
</tr>
</thead>
<tbody>
<tr>
<td>e-Governance is more efficient</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
compared to the traditional way of performing task

e-Governance is people oriented

e-Governance provides the best service towards business and citizens

e-Governance is cost effective

e-Governance is more reliable

| Question 12: Any other comments regarding ICT Strategy implementation in Bangladesh Government? |

Thank you
APPENDIX D

E-mail Communication for Data Collection

[Email body]

Dear Sir,

Mr. Abul Kalam
Deputy Chief
Planning Division, Ministry of Planning,
Government of Bangladesh

With due respect, I am pursuing a master in computer science at University of Malaya by full dissertation, under the title of "A Roadmap to Information System Planning in Public Sector Enterprises of Bangladesh Government". Here I attached the interview questionnaire to collect the relevant data. I would be grateful if you provide any comments and suggestions by replying my research questionnaire which carry out my research work.

Thanking you,
Mohammed Mohammmed Haque
Dept. Computer Science
Faculty of Computer Science and Information Technology
Dear Sir,

Mr. Mohammad Ali,

IT Management Consultant,
Support to ICT Task Force Program project,
Planning Division, Ministry of Planning,
Government of Bangladesh

With due respect to state that, I am pursuing master in computer science at University of Malaya by full dissertation, under title of “A Roadmap to Information System Planning in Public Sector: Perspectives of Bangladesh Government”

Here attached the interview questionnaire to collect the relevant data. I would be grateful, if you provide any comments and suggestions by replying my research questionnaire which carry on my research work.

Thanking you,

Mohammad Mozammel Hique
Dept: Computer Science
Faculty of Computer Science and Information Technology
University of Malaya
Dear Mozammel Hoque,

I hereby attached duly filled questionnaire for your convenience.

Best of luck.

Yours,

[Signature]

Mozammel Hoque <mobaque_hdq@ymail.com>

Dear Sir,

Mr. Abul Bajul,

Temporary Chief,

Planning Division, Ministry of Planning,

Government of Bangladesh

With due respect to state that, I am pursuing master in computer science at University of Malaysia by full dissertation, under the title of "A Roadmap to Information System Planning in Public Sector: Perspectives of Bangladesh Government"

Here I attached the interview questionnaire to collect the relevant data. I would be grateful, if you provide any comments and suggestions by replying my research questionnaire which carry out my research work.

Thanking you,
Subject: Re: for a interview

Mr. Mokdad Al Mokammel Hoque,

Okay, you can come to my office tomorrow at 11:00 AM.

Thanking you.

On Nov 14, 2007 11:30 AM, mokammel hoque <enough_bitch@yahoo.com> wrote:

Dear Sir,

Mr. Mokdad Rahman, programmer,

Support to ICT Task Force Program project.

Planning division, Ministry of Planning.

Government of Bangladesh

With due respect to state that, I am pursuing master in computer science at University of Malaya by full dissertation, under title of "A Roadmap to Information System Human in Public Sector: Perspective of Bangladesh Government".

Sir, I need an appointment to take a interview to collect the relevant information, for my research purpose. Here, attached questionnaire, I would be grateful, if you give an appointment in any time this week which carry out my research work.

Thanking You,
Mr. Mokdad Hoque
APPENDIX E
SYSTEM CODE

Home Module Code (top):

```html
<tr><td align="center" valign="top">
<img src='images/top.png' border="0">
</td></tr>
<tr><td align="left" valign="top">
<table class=fortext4 align="left" border="0" width="995" cellspacing="0" cellpadding="0">
<tr>
<td height="1" bgcolor="white"></td>
</tr>
<tr><td align="left" valign="top" bgcolor="#BDB76B">
&nbsp;<a href="index.php">Home</a> | <a href="news.php">News & Events</a> | <a href="announcement.php">Announcements</a> |
<a href=""">Advertisement</a> | <a href=""">FAQ</a> |
<a href="feedback.php">Feedback</a> | <a href="contactus.php">Contact Us</a> | <a href=""">About</a>
</td></tr>
<tr>
<td height="1" bgcolor="white"></td>
</tr>
</table>
</td></tr>
<tr><td height="1" bgcolor="white"></td></tr>
<tr><td width="100%" bgcolor="#BDB76B"><?php include('pages/Login.php');?></td></tr>
<tr><td height="1" bgcolor="white"></td></tr>
<tr><td align="center" valign="top">
</td></tr>
```

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E-Services:

<?php
require_once('./include/common/common.php');
?>
<html>
<head>
<link href="<?php echo $live_site_css_forall;?>" rel="stylesheet" type="text/css">
<title>Government of the People's Republic of BANGALDESH</title>
<body leftmargin="0" topmargin="0" marginwidth="0" marginheight="0">
<table align="center" border="0" width="995" cellspacing="0" cellpadding="0">
<?php require_once('index_top.php');?>
<tr><td align="center" valign="top">
<table class=fortext4 align="left" border="0" height="100%" width="995" cellspacing="0" cellpadding="0">
<tr>
<?php require_once('index_left.php');?>
<!----Middle for forms---->
<?php require_once('pages/eservices.php');?>
<!----End Middle-------->
</tr>
</table>
</td></tr>
<?php require_once('index_bottom.php');?>
</table>
</body>
</html>

E-services:

<td width="10"></td>
<td width="835" align="left">
<table align="center" border="0" cellpadding="0" cellspacing="0" width="95%">
<tr>
<table class=fortext4 align="left" border="0" height="100%" width="835" cellspacing="0" cellpadding="0">
<tr>
<td width="835" bgcolor="white" valign="top">
</td>
</tr>
</table>
</td>
</tr>
<tr>
</tr>
<?php require_once('index_bottom.php');?>
</table>
</body>
</html>
<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>&lt;a class=&quot;nav1&quot; href=&quot;forms_online.php&quot;&gt;Agriculture&lt;/a&gt;</td>
</tr>
<tr>
<td>2</td>
<td>&lt;a class=&quot;nav1&quot; href=&quot;birth.php&quot;&gt;Birth Registration&lt;/a&gt;</td>
</tr>
<tr>
<td>3</td>
<td>&lt;a class=&quot;nav1&quot; href=&quot;forms_online.php&quot;&gt;Education&lt;/a&gt;</td>
</tr>
<tr>
<td>4</td>
<td>&lt;a class=&quot;nav1&quot; href=&quot;forms_online.php&quot;&gt;Health&lt;/a&gt;</td>
</tr>
<tr>
<td>5</td>
<td>&lt;a class=&quot;nav1&quot; href=&quot;passport.php&quot;&gt;Passport&lt;/a&gt;</td>
</tr>
<tr>
<td>6</td>
<td>&lt;a class=&quot;nav1&quot; href=&quot;forms_online.php&quot;&gt;Sports&lt;/a&gt;</td>
</tr>
<tr>
<td>7</td>
<td>&lt;a class=&quot;nav1&quot; href=&quot;forms_online.php&quot;&gt;Tax Payment&lt;/a&gt;</td>
</tr>
<tr>
<td>8</td>
<td>&lt;a class=&quot;nav1&quot; href=&quot;forms_online.php&quot;&gt;Travelling&lt;/a&gt;</td>
</tr>
<tr>
<td>9</td>
<td>&lt;a class=&quot;nav1&quot; href=&quot;forms_online.php&quot;&gt;Utility Bills&lt;/a&gt;</td>
</tr>
<tr>
<td>10</td>
<td>&lt;a class=&quot;nav1&quot; href=&quot;forms_online.php&quot;&gt;Voting&lt;/a&gt;</td>
</tr>
</tbody>
</table>
Admin:

```javascript
<script language=JavaScript>
<!--
content = new Array ();
content [0] = new Array (false,new Array('sub_0_1','sub_0_2'));
content [1] = new Array (false,new Array('sub_1_1'));
content [2] = new Array (false,new Array('sub_2_1', 'sub_2_2', 'sub_2_3', 'sub_2_4'));
content [3] = new Array (false,new Array('sub_3_1', 'sub_3_2'));
content [4] = new Array (false,new Array('sub_4_1', 'sub_4_2'));
content [5] = new Array (false,new Array('sub_5_1'));
content [6] = new Array (false,new Array('sub_6_1'));

isOPERA = (navigator.userAgent.indexOf('Opera') >= 0)? true : false;
isIE = (document.all && !isOPERA)? true : false;
isDOM = (document.getElementById && !isIE && !isOPERA)? true : false;

function processTree (id)
{
    if (content [id][0]){  
        for (i = 0; i < content [id][1].length; i++)
            hide (content [id][1][i]);
        content [id][0] = false;
    } else{
        for (i = 0; i < content [id][1].length; i++)
            show (content [id][1][i], 'table-row');
        content [id][0] = true;
    }
    return false;
}

function show (id, displayValue)
{
    if (isDOM)
        document.getElementById(id).style.display = (displayValue)? displayValue : "block";
    else if (isIE)
        document.all[id].style.display = "block";
}

function hide (id){
    if (isDOM)
        document.getElementById(id).style.display = "none";
    else if (isIE)
        document.all[id].style.display = "none";
}
if (isDOM || isIE){
    document.writeln('<style type="text/css">');
    document.writeln('.
.SubItemRow { display: none; }');
    document.writeln('</style>');
} // -->
```
<table width="100%" border="0" cellpadding="5" cellspacing="2" class="forTexts">
<tr><td width="100%">
<img src="images/bullet2.gif" width="7" height="8" border="0">
<a href=./ onClick="processTree (0); return false;" class=headerWhite>Coming</a></td></tr>
<tr id='sub_0_1' class=SubItemRow>
<td class=SubItem>&nbsp;&nbsp;<img src="images/bullet1.gif" width="7" height="8" border="0">&nbsp;<a href="admin.php" class=textWhite>Set</a></td></tr>
<tr id='sub_0_2' class=SubItemRow>
<td class=SubItem>&nbsp;&nbsp;<img src="images/bullet1.gif" width="7" height="8" border="0">&nbsp;<a href="admin.php" class=textWhite>Set</a></td></tr>
<tr><td width="100%">
<img src="images/bullet2.gif" width="7" height="8" border="0">
<a href=./ onClick="processTree (1); return false;" class=headerWhite>Feedback</a></td></tr>
<tr id='sub_1_1' class=SubItemRow>
<td class=SubItem>&nbsp;&nbsp;<img src="images/bullet1.gif" width="7" height="8" border="0">&nbsp;<a href="feedback.php" class=textWhite>View Feedback</a></td></tr>
<tr><td width="100%">
<img src="images/bullet2.gif" width="7" height="8" border="0">
<a href=./ onClick="processTree (2); return false;" class=headerWhite>News</a></td></tr>
<tr id='sub_2_1' class=SubItemRow>
<td class=SubItem>&nbsp;&nbsp;<img src="images/bullet1.gif" width="7" height="8" border="0">&nbsp;<a href="view_news.php" class=textWhite>View News</a></td></tr>
<tr id='sub_2_2' class=SubItemRow>
<td class=SubItem>&nbsp;&nbsp;<img src="images/bullet1.gif" width="7" height="8" border="0">&nbsp;<a href="update_news.php" class=textWhite>New News</a></td></tr>
<tr id='sub_2_3' class=SubItemRow>
<td class=SubItem>&nbsp;&nbsp;<img src="images/bullet1.gif" width="7" height="8" border="0">&nbsp;<a href="view_update.php" class=textWhite>View Announcement</a></td></tr>
<tr id='sub_2_4' class=SubItemRow>
<td class=SubItem>&nbsp;&nbsp;<img src="images/bullet1.gif" width="7" height="8" border="0">&nbsp;<a href="update_site.php" class=textWhite>New Announcement</a></td>
</table>
<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Send Emails</td>
<td>Send email to user</td>
<td>Show send emails</td>
</tr>
<tr>
<td>Change User Details</td>
<td>Change username</td>
<td>Change password</td>
</tr>
<tr>
<td>Login History</td>
<td>Show History</td>
<td></td>
</tr>
</tbody>
</table>