

PROBLEMS WHEN
IMPLEMENTING E-
GOVERNANCE SYSTEMS IN
DEVELOPING COUNTRIES
: A QUANTITATIVE INVESTIGATION OF
IMPLEMENTATION PROBLEMS IN
BANGLADESH

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Title: Problems when implementing e-governance systems in developing countries: a quantitative investigation of implementation problems in Bangladesh

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Abstract

This research addresses the issues affecting e-governance implementation in developing countries. Implementing e-governance has always been a challenge either it is social, economical or political. Beside this there are many technological problems which should be understood and meet so that a user accepted e-governance system emerges.

This research provides a quantitative investigation of e-governance implementation problems with emphasis on analyzing quantitative data gathered in a survey using a structured questionnaires that was generated on the basis of our theoretical study.

Furthermore this research will provide a clear conception about those problems which should be considered at the time of implementing an e-governance in developing countries.

Keywords: Information system, problem, implementation, developing country, e-governance.

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1 INTRODUCTION

1.1 Background

In the age of Information technology we can safely assume that one day there will not be an organization without an information system of its own. According to Fourman (2002) "Informatics is the science of information. It studies the representation, processing, and communication of information in natural and artificial systems. Since computers, individuals and organizations all process information, informatics has computational, cognitive and social aspects".

The term informatics was coined by Dreyfus, in March 1962. In French term it is called *informatique* (Dreyfus, Ph. 1962). Phonologically, informatics combines elements from both information and automatic, which strengthens its semantic appeal (Fourman, M. 2002). So according to Mikhailov, Chernyl & Gilyarevskii (1966, p 35-39) "Informatics is the discipline of science which investigates the structure and properties (not specific content) of scientific information, as well as the regularities of scientific information activity, its theory, history, methodology and organization". Informatics is an immense area of science with having information system as well as technology. Our research targets e-governance which is deeply intertwined with the discipline of informatics. Informatics is a new era of science and the progresses is going through by developing, defining, criticizing and refining new concepts day by day. In our research we illustrate specific problems when implementing e-governance in developing countries. Once these problems are identified and addressed then the e-governance will get more user acceptance and the quality of the system will be increased. In Sweden a survey performed by Exido International AB in 2004 shows that 68 % of all IT projects are perceived as failures by the customers (Lind, B. 2010). So we can say the user acceptance is very important for success of an IS. If we could go through all of these aspects we can say that the informatics as a science will be benefited from our research. When developing countries implements e-governance they face a huge number of problems. Grande-Bretagne (2004, p 96) defines problem as- "A problem is a condition often identified as a result of multiple incidents that exhibit common symptoms. Problems can also be identified from a single significant incident, indicative of a single error, for which the cause is unknown, but for which the impact is significant".

Here the e-governance implementation problems are those for which e-governance implementation face obstacles or is deviated from reaching its expected goal.

UNESCO (2003) defined e-governance as:

"Governance refers to the exercise of political, economic and administrative authority in the management of a country's affairs, including citizens' articulation of their interests and exercise of their legal rights and obligations. E-Governance may be understood as the performance of this governance via the electronic medium in order to facilitate an efficient, speedy and transparent process of disseminating information to the public, and other agencies, and for performing government administration activities" (ARC.GOV).

Most of the developing countries face lots of problems while introducing the e-governance and sometimes they failed. According to Heeks (2003) who has done substantial research in the subject area- "Most implementations of e-government in developing countries fail, with

35% being classified as total failures (e-government was not implemented or was implemented but immediately abandoned), and 50% as partial failures (major goals were not attained and/or there were undesirable outcomes)".

As we know Bangladesh is a developing country. In 2008, Bangladesh government made a declaration to digitalize all sectors of the government as well as implement e-governance. This project is already started in its different parts which are facing lots of problem. In 2010, the Bangladesh government has declared their "National Science and Technology Policy". It is here that the government has stated official policy about IS that can help us to understand the environment of the IS implementation area.

1.2 Statement of problem

Many problems related to e-governance implementation in a developing country are psychological as well as technical. It is necessary to adapt good enough to the current situation of the e-governance implementing area to avoid bad user reactions. One of the most important quality factors of an e-governance is user acceptance.

Developing countries like Bangladesh has taken the first steps toward implementing e-governance and they are facing and will face a lot of problems in future before achieving user acceptance.

Here in our research we focused on to find out the relevant problems that developing countries are facing to implement e-governance and make it user friendly. Our study is completely based on Bangladesh.

1.3 Purpose of the study

IS has become an inevitable part of our society. Many problems may arise when implementing an e-governance in developing countries. The purpose of our research is to identify the problems related to social, technological, economical etc. that may arise while implementing the e-governance in a developing country like Bangladesh.

1.4 Research questions

What aspects are relevant to consider when implementing an e-governance in a developing country like Bangladesh?

This question will be illuminated by studying the following sub-questions:

- What are the general problematic issues that hamper the implementation of e-governance?
- What are the problematic issues that hamper the implementation of e-governance only in Education sector?
- What are the problematic issues that hamper the implementation of e-governance only in Administration sector?

- What are the problematic issues that hamper the implementation of e-governance only in Business sector?
- What are the problematic issues that hamper the implementation of e-governance only in Agriculture sector?

1.5 Target group

The target group of this research is following:

- Practitioners and users of e-governance systems.
- Future researchers and students interested in implementing e-governance systems.

1.6 Delimitations

This research is about e-governance implementation problems in Bangladesh. The implementation of e-governance has two ends. One end is the provider which is government here and other end is the receivers who are users. In this research authors only considered from the users' perspective what kind of problems they are facing not from the government perspective.

1.7 Expected outcome

The expected outcome of this research is to identify the possible problems that occur when implementing e-governance in a developing country like Bangladesh.

1.8 The authors' own experience and background

Bangladesh as a developing country is facing vast challenges while implementing e-governance. Government of Bangladesh has declared information and communication technology as one of the thrust sector and understanding ICT importance. In Bangladesh the literacy rate is very low and very few people are used to information system (IS). Authors are from Bangladesh and have worked as software programmers in software firm, so authors have practical knowledge about IS development issues but does not have previous experience in quantitative data collection method used.

As authors came from a developing country, so the actual situation over there is known. That helped authors to do the research.

2 RESEARCH DESIGN

2.1 Research perspective

Scientific research perspectives are mainly categorized in two ways, one is positivism and another is hermeneutics. To generate knowledge about the social world positivism is perhaps the most suitable attempt (Insights, A. 2009). Also, research conducted within fields such as information systems a positivist philosophy is one of the more popular approaches (Brooke, C. 2002).

Since our research aims at creating information knowledge about the problems to getting user acceptance of e-governance in a developing country through investigation the users of the system, positivism is the most relevant approach because it provides the fundamental connection between theoretical study and statistical analysis of quantitative relationship.

There are two main approaches to prefer from when conduct a scientific research: quantitative and qualitative approach (Yin, R. K. 1994). A quantitative research approach gives an analytical perspective with formalized and structured data, which is used for statistical analysis (Holmes, I.M. & Solvang, B.K. 1996). According to Maykut & Morehouse (1994) “quantitative research is based on observations that are converted into discrete units that can be compared to other units by using statistical analysis”. So in this approach, statistical or numerical analysis is an essential part.

The qualitative research means that the method has a primary purpose to give an understanding of fundamental information. Qualitative approach can provide better understanding of the phenomenon under investigation and the problem can be understood within the context (Marshall, C. & Rossman, G.B. 1999). The nature of the qualitative approach is primarily to understand, not to explain.

Quantitative research identifies with positivism, which, presented by Gall, Borg & Gall (1996, p 18), is the belief “that physical and social reality is independent of those who observe it”. So here our research perspective drives us to choose quantitative approach.

2.2 Research strategy

A Research strategy is a systematic plan of searching the information researcher needs quickly and efficiently. Research strategy refers to the plan that a researcher will pursue to execute an investigation to address the research questions. It specifies the source of data constraints that may hamper the research and how they will be addressed (Saunders, M. K., Lewis, P. & Thornhill, A. 2000).

Research strategy is the general idea or steps to answering the research questions which has been set by researchers. It will include clear objectives, which comes from research questions specify the sources from which researcher be determined to collect data. It also considers the restrictions that researcher will inevitably have success as access to data, time, location and money, ethical issue (Saunders, M. K., Lewis, P. & Thornhill, A. 2000).

For a given situation, the most suitable strategy depends on some factors like the type of research question, the control an investigator has over actual behavioral events, the focus on contemporary as opposed to historical phenomena (Yin, R.K. 1994). Research strategy depends on the characteristics of research questions. Normally the common type of research questions are formed by using 'who', 'how', 'why', 'what' etc. When these types of questions are used then the researcher can be benefited using survey (Yin, R. K. 1994).

Our main research question is "What aspects are relevant to consider when implementing an e-governance in a developing country like Bangladesh?" which is related to "what" question. In a developing country like Bangladesh IS has not been introduced in every sector. Here e-governance is in starting stage. Most of the areas of Bangladesh are unknown to e-governance. That's why some problems for implementing e-governance arise and numerous problems are still uncovered. As a result, we choose quantitative research approach and the questionnaires using survey method which is the most suitable method from our point of view because survey is a non-experimental, descriptive research method.

The quantitative information is provided by survey, which can be analyzed statistically. Every respondent with similar background are asked the same series of questions are the main phenomena of quantitative research. The large numbers of questionnaire involves with this approach and it is very structured.

The researcher search for verbal or written responses of his/her questions or statements in a survey. For gathering data about individual choice, prospects, past events, and private behaviors, surveys is the most effective method. The greatest strength of a survey method is versatility. It is a practical approach to gather information and the most economical way in many other situations (Emory, C. W. 1980).

In our research, the theoretical study represents the problem areas of the thesis. Results from the theoretical research are then verified through the empirical survey that adopts the perspective of the community as perceived by its members. The empirical research however also aims to find out new problematic aspects from experience. In the theoretical study (section 3.5) we described a model that shows the whole context of e-development and after getting our empirical result we relate this result in terms e-development model (section 4.6).

Following Figure 1 illustrates the research strategy:

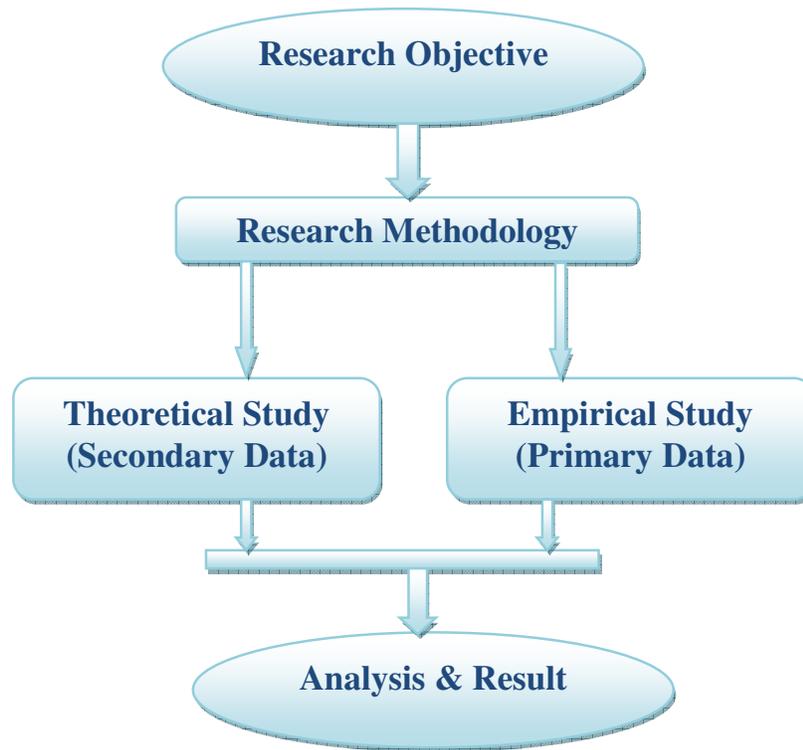


Figure 1: Research Strategy

2.3 Data collection procedure

The term data collection is used to explain a process of preparing and collecting data based on desired objective. There are several ways to collect necessary data for a survey, which provides essential basis for the study (Saunders, M. K., Lewis, P. & Thornhill, A. 2000).

The two main categories of data are: primary data and secondary data. Primary data refers to the data that has been gathered specifically for the ongoing research while secondary data has been gathered previously on another circumstance. Secondary data are collected from secondary sources such as government publication, personal records, census and Primary data collected through observation, interview and/or questionnaires (Hair et al 2003).

Secondary data is such kind of data that previously collected by someone for some reasons and it can be used to get a view of current study. These data might be small, simple, micro-level data those are cheaper and easily obtainable than the primary data. It helps researchers to understand the research problem easily and provides a basis for it. In addition, it saves time, money and also provides researcher with a broader view on their area of study and background information that might be important under investigation (Saunders, M. K., Lewis, P. & Thornhill, A. 2000).

Primary data is collect by researcher directly from their own knowledge and study to solve any problem or take decision. It is essential for all areas of research because it is exact information for getting the results of an experiment or observation. The main ways of

collecting primary data are: questionnaires, case study, interviews, critical incident, observation, diaries, etc.

We are using both primary and secondary data in our research. At first, we collected secondary data from different relevant literature and paper those are published in different journals, government publications, international publications, administration journals, books, periodicals and long list of web sites. We have used this text to understand the real scenario and in achieving the important knowledge regarding our research area. In addition, for gathering primary data from the relevant system users, we have conducted survey through structured questionnaires. The purpose of this field survey was getting different problems that have been faced or will be face by the users of the e-governance. In this part of our research, we have sampled the users of the e-governance in several categories according to their professional background.

Mainly there are two kinds of sampling: probability sampling and non-probability sampling. Probability sampling is based on random procedures. On the other hand non-probability sampling method, the researcher decides from the beginning how many objects with specific properties that should be included in the study. Since it was very difficult to find respondents with sufficient experience of e-governance, we used a non-probability sampling method.

In our research we have applied non-probability sampling method to the users and responsible personnel of the e-governance who are familiar with the area of e-governance to get appropriate data.

We have collected our questionnaire's answer only in Yes, No scale and some in Excellent, Good, Satisfactory, Fair and Poor scale.

2.4 Data analysis procedures

Data analysis can be most challenging and interesting aspect of research. It refers to derive the meaning of collected data in our research. We have chosen quantitative research approach to conduct our research. In quantitative data analysis, researcher may use summary of description of the data collected from the field. According to Yin (1994), "data analysis involves examining, categorizing, tabulating or otherwise recombining the collected data".

Already we mentioned that we have conducted field research among the users of e-governance using structured survey technique. After collecting data, reduction was conducted to arrange, refine and summarize the data for an analysis. We have used summary of description for data analysis.

After getting sample data from the survey questionnaires, we presented this data using table, Bar chart, Pie-chart. Then we have applied descriptive data analysis method to extract our empirical findings from those tables, chart on the basis of the majority answers. Then we compared our empirical findings with theoretical findings. At last we concluded our research result.

2.5 Strategies for validating findings

Joppe (2000, p 1) provides the following explanation of what validity is in quantitative research:

“Validity determines whether the research truly measures that which it was intended to measure or how truthful the research results are. In other words, does the research instrument allow you to hit "the bull's eye" of your research object? Researchers generally determine validity by asking a series of questions, and will often look for the answers in the research of others” (Golafshani, N. 2003).

Validity determines whether or not the research has been able to measure what it is supposed to measure. There are three different categories of validity: internal, external and construct validity (Yin, R. K. 1994).

Internal validity evaluates how well the outcomes of a study match with the actual reality. Strong internal validity refers not only have consistent measures of independent and dependent variables but also powerful justification that causally links between them. The dependent variables influenced for the effect on independent variable (Experiment-resources2).

External validity evaluates to what extent the results from a study can be applied to other situations. “External validity asks the question of generalizability: To what populations, settings, treatment variables and measurement variables can this effect be generalized?”(Campbell, D.T., Stanley, J.C. 1966). The main principle of external validity is the procedure of generalization, whether result comes from a small sample group, can be extended to make predictions about the entire population (Experiment-resources1).

Construct validity defines experimental measures or test up to its claims. Construct validity evaluates whether or not the researcher has used appropriate operational measures in the study, and if there has been an objective judgment while collecting data. Often, there is no accepted unit of measurement for constructs and even fairly well known ones, such as IQ, are open to debate (Experiment-resources3).

In our research we have tried to generalize the concept of e-governance implementation problem on the basis of previous research and our survey result on the area of e-governance. So, external validation is relevant to our proposed study.

2.6 Result presentation method

We have presented our result mainly as texts format which is supported by the graphical diagrams, statics, result of survey etc.

3 THEORITICAL STUDY

3.1 Key concepts

The meaning of different important aspects varies person to person. In this section we have defined some important concepts which were used in our thesis paper and by reading this important aspect any one can get a basic idea about it.

Information system (IS): IS helps people and organizations to utilize technologies gather, process, store, use and distribute information. It also interacts among people, algorithmic processes, data and technology. In addition, it not only refers to an organization's use of information and communication technology (ICT), but also the arrangement of people that are interacting with this technology in support of business processes.

Information system implementation: In our research IS implementation means converting paper based system into computer based. In general sense, IS implementation is the process of getting a new or significantly changed system for using those whom it was planned to make more electronic based system.

Developing country: A country with low per capita income and most of the people having a lower standard of living. Also it is known as a third-world country. These countries are far away from achieving industrialization with respect to developed country. The growth rate of population is very high which is correlated to low income.

ICT applications in developing countries: There are many Information and communication technology (ICT) applications are being used in developing countries. These applications help speed up the development of the country with time. Fixed telephone and cellular telephone services, Internet services, E-commerce are the applications of ICT in developing countries.

E-government: E-government is very popular term now-a-days. E-government is the computerization of everyday existing government activity. It include every day communication like meeting time notification, documents accessing such as minutes of meeting, document policy, necessary data accessing, government project tracking progress, broadcasting policies and strategies like the laws passed at the parliament.

E-governance: E-governance consists of the use of information and communication technologies (ICTs) to relationships among with citizens, civil society, the private sector, and the state for support different public services, government administration, and democratic approaches.

E-agriculture: Now-a-days E-agriculture is the rising field related to agricultural informatics, development and entrepreneurship which refers to agricultural services, technology distribution and information delivered or enhanced through the Internet and related technologies.

E-business: E-business or electronic business is the business that accomplish with the help of Internet. Buying and selling is not only the main concept of e-business but also servicing customers and communicating with business partners.

User interaction: In general, user interaction refers the interaction between Human and computer. User interaction includes both software and hardware that occurs at user interface. In broad sense it concerns with the design, evaluation and execution of interactive computing systems for users to use the study of key factors surrounding them.

User acceptance: In our research user acceptance means a system which fulfils the entire requirement that the users of the system expect from it. Lack of user acceptance is the main barrier to implement a successful new IS.

3.2 Subject areas relevant for the research

Below Figure 2 shows different subject areas that are relevant to our research.



Figure 2 : Different subject areas relevant to research

Sub-question one: What are the general problematic issues that hamper the implementation of e-governance?

Sub-question two: What are the problematic issues that hamper the implementation of e-governance only in Education sector?

Sub-question three: What are the problematic issues that hamper the implementation of e-governance only in Administration sector?

Sub-question four: What are the problematic issues that hamper the implementation of e-governance only in Business sector?

Sub-question five: What are the problematic issues that hamper the implementation of e-governance only in Agriculture sector?

3.3 Previous research

There are several research areas which give an important contribution for the basis of our theoretical study. Developed countries are studying IS Implementation problems for a long time and now developing countries as well. Beaumaster (1999) worked on Information Technology Implementation Issues. His research project addresses the issues affecting information technology development and deployment. His study also represents an exploratory look of the problematic issues surrounding information technology (IT) implementation. In addition he focused on the perceiving procedure of local government administrator's problem. His study provides the following concepts: a discussion of management and organizational issues, the specific problems of local government executives while implementing IT and a complete view of the overriding problems associated with the IT development and deployment process in local government.

Today many developing countries are concerned about rising e-governance in their own country. Bose & Rashel (2007) describes e-governance as the application of Information and communication Technology (ICT) for delivering different government Services, exchange of information communication transactions, integration various stand-one systems and services between Government and citizens. He also describes the services between Government and Business as well as back office processes and interactions within the entire government frame work.

Paul (2007) focused on several elements of good governance like transparency, accountability, participation, social integration, public financial management reform and development. These elements highlight the success of e-governance. This research is actually based on a case study.

Rajon & Zaman (2008) presented a relative analysis of present government architecture and the prospects of implementing e-governance in Bangladesh which emphasize on the usage and effectiveness of e-governance to eliminate corruption from various sectors of governance. Also represents the e-governance adaptability of prime sectors of government. In addition it also shows methodical study of the sectors where mass people involves.

Alam (2007) find out some challenge to develop e-governance in Bangladesh. Here he demonstrated the problems especially in administrative areas.

3.4 Relevant literature sources

Alam, Ahmed & Islam (2007) focused on some issues and challenges while implementing e-Governance for developing country specially Bangladesh. They also discussed the two issues of infrastructural obstacles and poor ICT policies has possibility to address in case of implementing e-governance which are collaborating with the public and private partnerships.

Rajon & Zaman (2008) focused on various aspects of implementing e-governance in Bangladesh. They did an analysis on present Bangladesh government architecture and by using e governance how Bangladesh can reduce corruption. They actually focused on the necessary issues of e governance in Bangladesh from various sector.

Gonçalves & Sapateiro (2008) focused on the technical issues which are related to interoperability and legacy system implementation that are not the main challenges. There are some aspects of the organizational perspective that also lead to poor system implementation. E-governance is beyond the range of e-government. E-government is defined as mere release of government services and information to the public using electronic means. E-governance allows direct participation of their citizen by practicing e-democracy, e-voting, e-education facilities and participating political movement in online. So from wide concept of e-governance will cover government, political parties, citizen's participation, organizations, Parliament and Judiciary functions (Zhiyuan, P. F. 2002).

Harris (2000) stated that e-governance is not just about government web site and e-mail. Also declared that it is not only delivery services over the Internet and accessing digital information or electronic payments but also changes how the citizens relate to governments. In terms of needs and responsibilities, it brings new concepts of citizenship. E-governance allows their citizens for participating democratic political process to communicate with government which also contribute to the governments' policy-makers and citizens to communicate with each other. Therefore, in wider sense, E-governance has more allegation than E-Government (Mohamed & Tahon).

3.5 E-governance and Onion Ring Model for e-development

There are number of definitions of e-governance in existence that focus on specific activities and functionalities. For expressing e-governance, e-democracy and e-government are usually adapted terms. In terms of information coverage and decision-making, e-democracy refers to the processes and structures that include all types of electronic interactions between the government and the citizens. E-government is one type of e-business in governance which delivers electronic services to the public (citizens and businesses) that refers to the processes and structures required to collaborate with business partners and to conduct electronic transactions inside an organizational unit. Consideration of the above two terms, e-governance is stated as an application of electronic way to develop the interactions between government to citizens and business. It also involves electronic means within internal government operations to simplify and develop democratic government and business features of

government with the primary goal of enhancing the administrative efficiency (Rajon, S. A. A. & Zaman, S. A. 2008).

The whole framework of e-governance is mainly pointed as G2G (Government to Government), G2B (Government to Business) and G2C (Government to citizens) in terms of service with key importance in G2C for establishing e-democracy (Farooq, S. et al, 2004). In the near future e-governance may be described as the process of adapting electronic means in possible areas and steps of government to ensure valid access of administrative and service oriented information. This includes the potential to set up accountability and transparency of government functions and maximum service by redesigning and reallocating the administrative and operating system of government (Rajon, S. A. A. & Zaman, S. A. 2008).

The meaning of e-governance does not only imply having website moreover it gives online services and information that enhance mass-participation for making decision, transparency of affairs relating public interests, domestic concerns and accountability of the authority. Considering this, the term e-governance is very popular in developed countries and developing country also trying to establish (Rajon, S. A. A. & Zaman, S. A. 2008).

Onion Ring Model: In implementing e-governance it is important to focus not only on its ICT infrastructure or social enterprise but also the whole surrounding system needs to be adapted to match the situation. Heeks (2005) proposed a model that shows the total context of a system for e-development that is called the ‘Onion Ring’ model Figure 3 below. This model calls for a methodical to e-development where information drives the process and technology does not dominate.

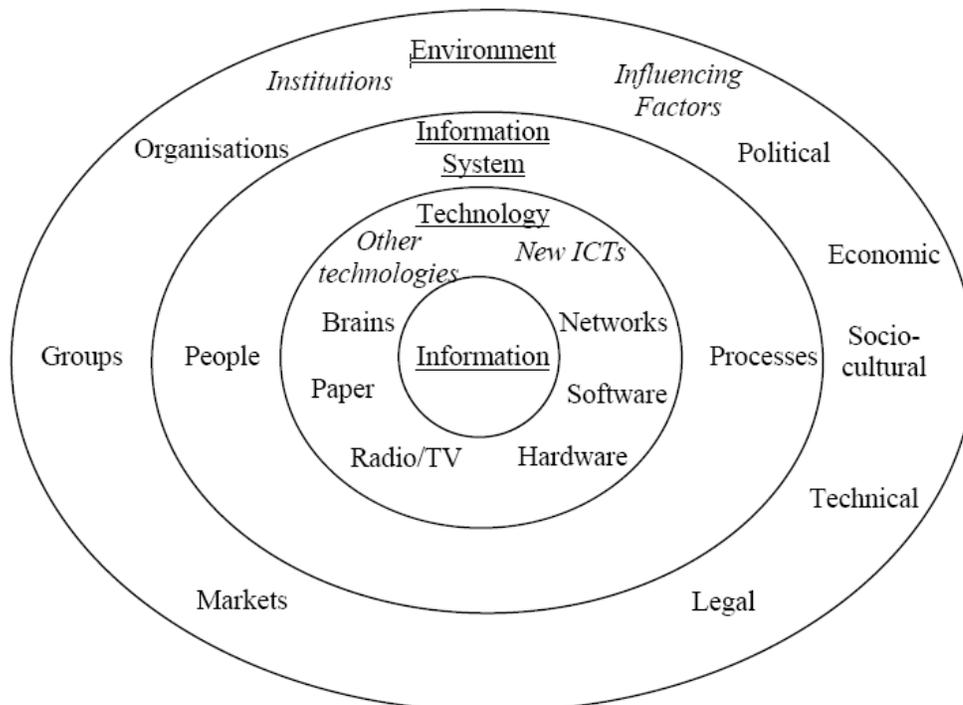


Figure 3: Onion Ring Model (Heeks, R. 2005)

There are four main part of this e-development model (Heeks, R. 2005):

1. **Information:** It is the heart of any e-development. For understand the role of ICTs in e-development; it is necessary to understand the role of information first; after that the technology comes.

2. **Technologies:** according to this model technology covers networks, software, hardware which are the new ICTs and brains, paper, radio/ TV are the traditional technology.

3. **Information systems:** An Information system functions among people, algorithmic processes, data and technology. In addition, it is not only referring for an organization uses of the information and communication technology (ICT), but also the arrangement of people who are interacting with the information and communication technology in support of business processes.

4. **Environment:** Heeks (2005) describes "Information systems are like trees with their roots hidden in the surrounding "soil" of organizations, institutions, and environment: political, economic, cultural, etc". The context factors of many e-development failures are: legal restrictions, cultural factors, infrastructural and economic constraints, and, above all, politics. The context factors are very important for proposing, planning and implementing an e-development project. The other institutional context factors are organizations, groups, markets should be considered for e-development.

3.6 Conditions of e-governance in a developing country

At the time of implementing e-governance the developing countries faces many challenges. There are some sectors where the government faces many problems such as: Political, social, economical and technological aspects. Developing countries are still implementing projects in the traditional way; on the other hand developed country already implemented paperless work. Initially it is okay but finally it cannot be the goal. The vision of developing country is not very high. To fulfill the vision the necessary steps should taken are not visible right now. (Alam, M. 2007).

E-governance adaptation is relevant to normal citizens which are the key factors for making good governance and information technology (IT). E-governance allows general people to interact with the government for various purposes to provide inputs for decision makers. For achieving these desired objectives, the steps of establishing an e-governance system in Bangladesh faces some challenges that can be summarized as Access, Awareness and Applications (Alam, M. 2007).

For a developing country, like Bangladesh it was always a big challenge to finance the capital exhaustive endeavors like access basements and communication infrastructure. Most Bangladeshis purchasing power is very low for newer ICT tools. While establishing e-governance, a lack of awareness among the middle and senior public officials remained a particular concern (Alam, M. 2007).

Awareness is best understood as social inference of computer-produced signs. First-order awareness is the instant change in a user's principle state that is a result of an assumption. Second-order awareness is the more constant situation of knowing that another person have

done something that lasts beyond an individual act of assumption. The point of this difference between computers may make user awareness about a remote person in the absence of an awareness interface (Oulasvirta, A. et al, 2007).

In Bangladesh the higher officials of government are not interested to familiarize with new technology. With this lack of awareness about ICT and the fears and some other factors also plays a vital part in the poor acceptance of ISs (Alam, M. 2007).

Awareness is therefore effectively a mental representation, or a belief state, of someone else's present situation. Awareness exists, ontologically speaking, primarily as a mind's creation rather than as a practice or activity. This does not refer to the behaviors where assumptions take place are not so important. That's why, it does involve that it would be a fallacy to hold action and inference as somehow analytically undividable (Oulasvirta, A.).

In a developing country like Bangladesh awareness the factor has a vast impact on implementing any IS. Lack of awareness about a system may derail efforts to get the user acceptance of it. The population of a country should have awareness of the system being implemented. The literacy of Bangladesh is one of the main reasons for this lack of awareness.

In Bangladesh the mental state of government officials pose the biggest restriction of accessing e-government. There are several reasons to make them resist of using computers beyond usual letters and documents typing. Among them some principal reasons are mentioned as: (1) resistant to any kind of change in their familiar working environment; (2) fear of computerization of different government activities may make some people redundant; (3) thinking computers are meant for low-level work like typist (Alam, M. 2007).

Though e-governance in Bangladesh is in initial stages there are also some successful e-governance initiatives from the Bangladesh government that we were able to collect information about.

❑ Submission of Utility Bills and getting Weather Forecast through mobile phone

Some of utility bills can be payable by using mobile phone. One of the largest mobile phone operator companies named Grameen phone is giving this facility for paying electricity bill. Payments of utility bills are a hassle and time consuming for general people that wastes important working hours. Broader ICT delivery channels, like SMS, the internet etc. can be used to pay the utility bills.

❑ Website, E-Mail and Phone Based Government Services

Different countries around the world provide the services through websites and telephones. One such success story is Secondary School Certificate (SSC) and Higher Secondary School Certificate (HSC) result in Bangladesh are remarkable initiative in this section. Now anyone can get his/her SSC/HSC result through SMS. Mixed with failed or not so successful e-Governance initiatives by Bangladesh government are a few truly successful initiatives that delivering improved citizen services.

❑ **Bangladesh Hajj Online Information, Under Ministry of Religious Affairs**

The Ministry of Religious Affairs of Bangladesh has taken a good initiative about e-governance in 2002. That year they started a website for presenting some informational-based services to the pilgrims, their relatives, agents and related government officials. This website is very interactive for searching information about individual pilgrims including current location and status and two-way communication with individual pilgrims (Farooq, S. et al, 2004).

❑ **Online Daily Market Price under the Ministry of Agriculture**

The ministry of Agriculture 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 the 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.

❑ **Electronic Birth Registration System**

In Bangladesh electronic birth registration system was introduced by the Rajshahi city corporation (RCC) jointly with the Local government division under the ministry of local government with technical and economic help from UNICEF. This is one of the best local level e-governance examples of Bangladesh. With support from development partners, the local government body, in their own initiatives and leadership took such a bold step. Once registered, the system also creates an immunization and plan for every child. The system maid ID is also used for getting admission in the public schools of the city (Bangladesh ICT Policy Monitor Network. 2007).

❑ **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, S. 200

3.7 ICT infrastructure

ICT infrastructure is known as one of the key barriers for implementing e-governance. To enable appropriate information distribution and opening new channels for communication for supplying new services, internetworking is necessary (Tapscott, 1996). Many developing countries are not capable of organizing the appropriate ICT infrastructure for e-governance

deployment and they suffer from the digital split. The digital split between developed countries and developing countries are large with high-income economies having 416 personal computers per 1,000 people and low-income economies only 6 per 1,000 (World Bank, 2003).

The fundamental infrastructure development of detaining the compensation of new technologies and communications apparatus is essential for implementing e-governance. Many different types of access methods, like remote access by cellular phones, satellite receivers, kiosks, etc., are required for taking consideration by governments in order to every one of society that can be served irrespective of their substantial and economic capabilities. Though, an ICT infrastructure does not only consist of telecommunications and computer equipment. E-readiness and ICT literacy are also important in order to the people capable of using and getting benefit from e-governance applications. Apparently, the higher level of human development is more likely the citizens will be inclined to believe and use of e-governance services (Ndou, V. 2004).

The ICT infrastructure is an overall name used to describe all the computer and communications hardware and software used to manage clerical, administrative, and management tasks in organizations. These ICT infrastructures of a country demonstrate how developed it is. Developing countries are at a disadvantage in this sector for many reasons. 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.

Network infrastructure is one of the main parts of ICT infrastructure. In the last few years Bangladesh has had rapid growth in mobile networks providing an effective way to connect with the internet. Now these mobile networks cover 100% area of the country. In Bangladesh now total number of mobile Phone Active Subscribers has reached 65.565 million at the end of October 2010. The mobile Phone subscribers are shown below:

Operators	Active Subscribers (millions)
Grameen Phone Ltd. (GP)	28.487
Robi Axiata Limited	11.845
Orascom Telecom Bangladesh Limited (Banglalink)	18.408
PBTL (Citycell)	1.933
Teletalk Bangladesh Ltd. (Teletalk)	1.224
Warid Telecom International L.L.C (Warid)	3.666
Total	65.565

Table 1: Total mobile phone subscribers in Bangladesh

Source: Bangladesh Telecommunication Regulatory Commission. October, 2010.

In Bangladesh Internet Service Provider (ISP) companies are providing service all over the city area. According to Bangladesh Telecommunication Regulatory Commission- the number of current ISP company number is 107. In Bangladesh ISP as well as the mobile companies provide service that is very as compared with other developing countries. Jun, 2005 Bangladesh connects with cyber optic line and this line directly connect with some country like Singapore, Malaysia, Thailand, India, Sri Lanka, UAE, Pakistan, Saudi Arab, Egypt,

Italy, Tunisia, Algeria and France that's normally capacity is 44.6 Gigabit per sec (Bsc. 2008).

Another main part of the ICT infrastructure is access device. It may be computer, iPhone, router etc. In Bangladesh few years ago the predominant area of operations in the ICT sector was the hardware sector. It is probably one reason why there are such a huge number of hardware houses compared to software vendors. However in spite of this, quite understandably owing to its late entrance in the ICT field because of its PC penetration is one of lowest in the world (4.5 per 1000 people). Furthermore its growth has been limited to the capital city and few of the large metropolitan cities in our country. The growth rate is quite impressive. A recent study indicates that the PC growth rate in our country is around 40%. However even with this rate it is likely that considerable time will have elapsed before PC penetration reaches a more reasonable level.

There are so many supporting areas that can help construct better ICT infrastructure and electricity is one of them. Inadequate access to electricity remains one of the biggest stumbling blocks to create a comprehensive ICT infrastructure. In developing countries like Bangladesh electricity is one of the major national problems. A Bangladesh Power Development Board (PDB) source said while the official power demand was just 5000MW, the unofficial demand was hovering around 6000 MW. The officially estimated power demand is 5000 MW against a generation of around 3500 MW. Around 1500 MW power could not be generated due to short supply of gas to many power plants. Gas is a major concern also because several new gas-fired power plants with nearly 1000 MW generation capacity are expected to be drafted into service this year. "We are expecting 200MW new power generation from May. If we cannot ensure the gas supplies, it will become meaningless" PDB pointed out (Bpdb).

3.8 Information

In broadest sense, information is something which is capable of perceiving by us. This consists of written communications, verbal communications, arts, photographs and music, almost everything that is gettable (Unf. 2009).

The word information is also used in technical sense. According to Gordon & Margret (1985: 266-304) "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". The following table-2 shows different example of government information (Backus 2001).

Examples of information that Government ...		
...wishes to disseminate	...may make availableis required to supply
press notices	geographical data	performance indicators
consultation papers	demographic data	environmental indicators
policies	economic data	audited accounts
white papers	information collected	personal data
news	information generated	internal policy documents

safety advice	routinely	correspondence
benefits and entitlements	value added services	management reports
applicable regulations	business yellow pages	

Table 2: Examples of government information

In Bangladesh the government departments which are connect with the people and are responsible to relay the information do not cooperate in the way they should.

3.9 Education & Computer education

Education, which is the backbone of a nation, is unfortunately seen as a corrupted sector in a developing country like in Bangladesh. As, education is a fundamental need, in developing countries a major portion of the budget is spent in this sector. But, the history sadly says that, a major portion of this budget often finds its way into the pockets of corrupted personnel. Unnecessary and lack of motivation delay in granting various scholarships of the students, meaninglessly harassing the teachers in granting remunerations and other bills are some common objections of the concerned parties. The absence of monitoring in application and implementation is one of the reasons behind this, which may be partially eradicated by providing the information regarding distribution of funds and other operational and statistical data. The debates that often arise in modifying the curriculum may also be solved by integrating the facility so that public concerns are considered by way of electronic means before taking final steps of curriculum specification. Publishing the results of public examinations has established a well suited means of automatic verification and hence ensured greater transparency (Rajon, S. A. A. & Zaman, S. A. 2008).

Computers have an important role in our modern life. The computer industry has just about taken over the world. We are using computer everywhere now a days. It is not possible to consider any form of higher education or research work in any field without computers. That's why computer education is becoming integral parts so that we can function effectively in education sector or in the modern society. But it is critical because computer education in a developing country is not in good position. The lack of basic computer education is the barrier of developing a modern technology based society.

Challenges of computer education in developing country:

❑ Hardware infrastructures

Developing countries have a significantly lower level of diffusion and use of ICT than in the developed countries (Sharma, R. C. 2003). High prices of computer are not the main barriers in the growth of internet based education in developing country like Iran. But the lack of government allocations for computer equipments of universities, schools and public places with new computers and suitable hardware infrastructure are the problems. Most of the students who live in student dormitory suffer from the scarcity of physical infrastructure especially high-speed internet connection. In developing country, it is relatively very easy of getting computers into universities and institutions. But the main challenges are keeping them up and running. There are another challenge to resolve the technical problems because the laboratory coordinators are not enough skilful (Ensafi, R., Zamiri, A. & Kahani, M. 2007).

❑ Language proficiency, native language content

Language plays an important role in influencing internet usage. Since the Internet is dominated by English language content, English speaking countries have a strategic advantage in popularization of the Internet use (Xiaoming, H. & Kay, S.C. 2004). On the other hand, non-English speaking countries face enormous difficulty in tapping into the potential of the Internet as an information source (Ensafi, R., Zamiri, A. & Kahani, M. 2007).

❑ Computer education challenges in Bangladesh

There are many challenges that the computer based education is facing a lot in developing country like Bangladesh. These obstacles are ICT based teaching or learning one of them. Class room learning and education using computer is rarely found in there. Professional development of teacher using ICT is also absent in the Bangladesh education sector (Digital Bangladesh). The quality of ICT teaching is not good. So an increase in the quality of training provided is a necessity. But providing training for all parties involved (organizers, schools, and teachers) is seen as being problematic. One of them is high quality trainers are costly and hard to find. There is another problem facing this sector that is the short coverage of the training. Through this, teachers have to depend only on corresponding education boards, teacher training colleges and institutes for professional training, content development and distribution. Other challenges identified for nationwide implementation of ICT based teaching learning are: Shifting focus on Multimedia Classrooms is badly needed. Also, there is a significant scarcity of power/energy sources, required for the functional effectiveness of ICT infrastructure installations, specifically in rural and semi-urban areas. At times, necessary training and to somewhat adequate infrastructure will not suffice as there is also a huge gap in the availability of customized education content for Bangladesh (Digital Bangladesh).

If we categorize the group of challenges, the main challenges in computer education are as follows.

❑ ICT based professional development

There are some significant challenges like lack of tangible incentive mechanism for the teachers of developing ICT based professional for teacher. It also plays an important role for getting an efficient ICT training to disengaging teachers (Digital Bangladesh).

❑ Challenges in ICT literacy

The availability of computers does not mean that the high rate of ICT literacy. Other important factors are lack of effective lesson plans, lack of electricity, low speed of internet etc. ICT education in the area of technical and vocational training, the current curriculum is not fulfills the industry needs. There are some other factors like poor training infrastructure, lack of quality trainers, fragmented government ownership are the major issues hampers the effective development of vocational ICT education infrastructure. Other problems are lack of sufficient monitoring and evaluation of ICT based education initiatives (Digital Bangladesh).

❑ Gender inequality

Gender inequality in access to ICT in education is another challenge. In developing country like Bangladesh, girls on average have less access to ICTs and less opportunity for ICT-related engagement compared to boys because of illiteracy, lack of mobility and poverty (Digital Bangladesh).

❑ Lack of public awareness and knowledge of ICT

The public ICT literacy is still very low. What concerned us the most is that ICT literacy among students and teachers are also low, especially those that live in the perimeters or remote areas. Here public awareness campaign through various media is absent (Khan, S. 2009).

The problem is that many computer literacy and information technology programs are still in the infant stage. There are other types of problem faced during the study: small duration on time, lack of book and published sources are in Bangladesh. The study is based on limited variables (Baten, M. A. & Kamil, A. A. 2010).

❑ Current computer education situations in Bangladesh

At present the Computer education in Bangladesh is very poor. Now-a-days, to modernize and bring it up to date the computer/ICT related program at school and college level the government has also taken a number of initiatives (Digital Bangladesh.). For higher education, particularly in the leading public and private universities, for any student's learning experience ICT literacy has become a mandatory part, across the major programs. Ensuring the efficient delivery of knowledge through distance learning the government of Bangladesh established an Open University for using a variety of ICT options. This university is capable of catering to the requirements of a large population in a range of educational, technical and vocational programs via face-to-face, traditional broadcasting or net based virtual class.

3.10 Governance & Policy

Public Administration possesses the power of administering, managing and implementing the decisions taken by highest authority. Most of the developing countries are suffering for their political corruption. Sometimes this management process are biased due to corruption, the implementation of development activities derived from public demand are not performed. Generally public demands are not relayed to the supreme authority for consideration because they are not getting to exact information. Implementing e-governance and e-communication may at least echo the public opinion to the supreme authority for considerations (Rajon, S. A. A. & Zaman, S. A. 2008).

For implementing e-governance in a country, Science and Technology ministry should play the vital role to ICT related issues. In Bangladesh this ministry till now they are not taking proper responsibility to develop in this sector. Unfortunately, the number of ICT background personnel in the ministry in Bangladesh is negligible. Background of agriculture, fishery, administration or other background excluding ICT background is on the chair of decision making for implementing e-governance in Bangladesh. That's why they are not able to make the appropriate ICT policy for the country (Alam, M., Ahmed, K. & Islam, A. M. 2007).

The regulatory or any legal framework in Bangladesh has not yet been introduced to accommodate the growing wants of the electronic world. Still, in government offices, an e-mail has no official value and cannot be officially considered a suitable mode of communication.

In the same way all government organizations are facing the dilemma of lack of ICT professionals in Bangladesh. There are many vacant posts, but not suitable for excellent ICT professionals. As a result people from non-ICT background take up ICT positions. Ultimately organizations do not receive good ICT support from them (Alam, M., Ahmed, K. & Islam, A. M. 2007).

It is very difficult for government officials to encourage the use of IT systems even after implemented in a government offices. Moreover the lack of awareness about ICTs and the fears, there are some other issues that also play an important role for their non-acceptability of IT systems. They are worried about losing their important data or they are uncertain about the security features of the computers (Alam, M., Ahmed, K. & Islam, A. M. 2007).

3.11 E-business & e-banking

E-business refers to the procedures and structures that describe the connection between governments and the private associations. It also includes the Business-to-Government relationship model which refers to those services that are consumed by industrialists, businesses, and corporations, for commercial functions. These include filing statements of incorporation, obtaining business licenses, assistance with site locations, obtaining workforce information, and others (Fung, Z. 2002).

In Bangladesh this e-business is absence because of not getting proper online banking support. The term e-banking refers all types of banking tasks that are perform with the help of electronic networks including the transfer of funds between accounts, bill payment facilities and invoices, sending funds to third parties via emails ,applying for a loan, loan payment in installments, or internet connections apart from of where the client is sited.

The progress of banking technology has been driven by changes in distribution channels as confirmed by automated teller machine (ATM), Tele banking, PC-banking, Phone-banking and most recently internet banking (Chang, YT. 2003). It is essential for every country to have a strong banking facility and online banking is now part and parcel of a developed country.

In Bangladesh the concept of online banking is new. Online banking is a global phenomenon and Bangladesh is far away to reach the satisfactory level in global banking system (Raihan, A. 2001). Most of the banks in Bangladesh doing their banking tasks by traditional methods. Only a few banks are giving several banking facilities via internet that are only enquiry of account balance, summary of account, account details and account activity. But the important terms are still absence such as balance transfer, refill prepaid card, pay credit card dues, bills payment, loan repayment, loan information, statement request, view credit card statement. So Internet banking is still not available in everywhere in Bangladesh except some major cities (Raihan, A. 2001).

According to the survey of Bangladesh central bank named Bangladesh bank, there are so many drawbacks. For establishing technology based banking services there are some drawbacks like are insufficient telephone connectivity, Costly internet connection, lack of IT literacy, cost of PCs, lack of skilled IT personnel in banking sector, and low investment. For implementing online banking there are also some necessary things left. Reliable and secure information infrastructure including telecommunication infrastructure are the strong network connection through the whole country. Also the ICT diffusions in the banking sector, skillful operational staff, legal and regulatory framework. In addition, there are several steps that are considered in order to speed up the adoption of e-banking. Internet diffusion is a key term for the development of e-banking. Developing countries like Bangladesh the important thing of these sectors are that most of the Bangladeshi people are adapted with traditional banking system (Baten, M. A. & Kamil, A. A. 2010).

It is very hard for the government or domestic private sector to pool financial resources for developing e-banking infrastructure in Bangladesh (Raihan, A. 2001). Not only the limitation of infrastructure facility but also some problems like skilled manpower. There are lots of difficulties to collect the desire information. Disclosing the information is very restricted. All the time the IT divisions of banks are not cooperative.

3.12 Agriculture

In a developing country agriculture is one of the most important sectors. Most of the people from rural area in the developing countries are depends on it. The demand for agricultural products are increasing day by day, however, also offers opportunities for producers to keep up and improve their livelihoods. For uplifting the livelihoods and addressing these challenges of the rural poor population information and communication technologies (ICT) play an important role (Stienen, J., Bruinsma, W. & Neuman, F.). Bangladesh should emphasize on enhanced and productive agriculture, although Bangladesh is an agricultural country and most of the Bangladeshi earn from agriculture.

Agriculture is a knowledge-intensive industry where the growers obtain and process financial, environmental, technical and regulatory information to run their farms. In the agricultural IS there are several current challenges for farmer, such as the inadequacies, incapability to consistently provide accurate, timely and easily accessible information (Just, D. & Zilberman, D.).

Due to the alarming livestock emergency, the whole world is now facing a huge challenge regarding the arrangement of food. Now-a-days price hike is the most recent alarm all over the world. The poor governance is the resultant of middlemen-ship. For the middlemen-ship, the overall existence may be extremely threatened if we are not able to implement better mechanisms of achieving maximal production. The enhanced mechanism of agriculture includes the tasks of creating the most productive technology of making available to the users, also making the necessary operational information offered to the agriculturists in the shortest possible time. By implementation of e-governance it is possible to distribute the essential information including market demand-supply analysis effectively and efficiently. E-agriculture focuses on agriculture informatics, agricultural growth and entrepreneurship and supplies the agricultural services throughout internet and associated technologies.

Besides, if different subsidies on agriculture are provided via internet making all the steps monitor capable for public, intelligibility may be achieved at the maximum level of vanishing corruption. This success may also bring a horizon in e-marketing or e-commerce attracting the investors which may enlarge the scope of the growth of economy for both home and abroad (Rajon, S. A. A., Zaman, S. A. 2008).

According to the World Bank the main issues and challenges in the agricultural sector of Bangladesh as follows:

❑ High levels of rural poverty

In Bangladesh poverty is primarily a rural phenomenon, where 53% of its rural population classified as poor, comprising about 85% of the country's poor. For achieving the Millennium Development Goal (MDG) at 2015 of halving poverty to 26.5% , in agriculture the growth rate at least 4.0% and in the non-farm sector 7.0%. However the geographical and demographic characteristics of the countries, economic and institutional reality and its susceptibility to natural calamity make this a very challenging task (World Bank).

❑ Low agricultural productivity

Another challenge in Bangladesh is rapidly decreasing cultivating land. Beside the population growth rate 1.6 percent per year, demographic pressures and increased urbanization have results cultivated area to turn down at a rate of 1 percent per year. Though the productivity of agricultural land is decreasing day by day, it is necessary to reforming the agricultural research and extension systems, and financial and other regulations. In that case by addressing e-agriculture people will get proper information to productivity (World Bank).

❑ Poorly functioning input and output markets

The lack of simply accessible markets and collusion by the traders pose important constraints equally in agricultural input and output markets. Marketing margins are high with respect to services provided. Lack of market information and infrastructure, the weak rules and regulation, the existence of syndicates, and collection of illegal tolls further aggravate the situation. This is not at all good for improving agricultural production. By introducing e-agriculture services it is possible to make information available and remove the constraints (World Bank).

❑ Lack of enabling rural investment climate

Almost 45 percent of the rural population in Bangladesh is already landless or going to be landless. The development of the rural non-farm sector, though, is forced by lack of or poor quality of rural infrastructure and services, highly centralized government framework, weak rural economic systems, and a poor law and order situation (World Bank).

❑ Weak rural institutions

In Bangladesh though the NGO sector is well developed and the quality of informal organizations is improving, formal rural organizations still very poor. Government organizations are facing overlapped functions at all levels. Lack of coordination, low levels

skill and motivation, lack of responsiveness are also common in developing country. Elite capture is also quite common in rural areas (World Bank).

❑ **Vulnerability to natural disasters**

In Bangladesh three large rivers - Ganges, Brahmaputra and Meghna are the terminal floodplain delta. About 20 to 30 percent land of Bangladesh are flooded every year and every few years about 40 percent, of the country is flooded, causing harm to infrastructure, crops and on the whole economy. Probable climate changes and increasing the sea level are likely to getting worse the situation. In addition, the issues such as public and private functions and community participation in adversity organization, environmental safety, and institutional improvements of Bangladesh Water Development Board (BWDB), need to be addressing (World Bank).

For employment agriculture is the largest source for skilled and unskilled labor; if Bangladesh can produce skill manpower with a high tech agro technology and guarantee a significant agriculture education in Bangladesh then the opportunities will be functional (Alam et al, 2009).

In developing country like Bangladesh the institutional capacity for research work is weak. As a result, the technology available is not sufficient and information is not available. Lack of technological knowledge and alternative is often mentioned as the main obstacle for irrigation development. In that case, by introducing e-agriculture it is possible to make aware about those issues and eliminate constraints (Unohrlls. 2007).

3.13 Summary of theoretical findings

From our above theoretical study we got following key aspects that are necessary to consider when implementing e-governance in a developing country like Bangladesh:

Sub-question one: What are the general problematic issues that hamper the implementation of e-governance?

- Inadequate ICT Infrastructure and Planning
- Low financial capability
- Lack of native language standardization
- High-cost, low-reliability of Internet access
- Lack of electricity
- Lack of Awareness

Sub-question two: What are the problematic issues that hamper the implementation of e-governance only in Education sector?

- Lack of ICT resource.
- Gender inequality.
- Lack of training facilities

Sub-question three: What are the problematic issues that hamper the implementation of e-governance only in Administration sector?

- Lack of ICT professionals in government
- Non-acceptability of IT systems
- No proper Regulating ICT authority
- Inadequate access to ICT by govt. personnel

Sub-question four: What are the problematic issues that hamper the implementation of e-governance only in Business sector?

- Lack of e-banking facility
- Unstructured business organization
- Lack of skilled IT personnel

Sub-question five: What are the problematic issues that hamper the implementation of e-governance only in Agriculture sector?

- Weak rural institutions
- Lack of enabling rural investment climate
- Uneducated agricultural livelihood

4 EMPIRICAL STUDY

4.1 Purpose

The purpose of empirical study is to verify the issues found in our theoretical study and also find some new problems that are faced by the users of the e-governance by using survey. Since survey methods are valid techniques to access individuals perception (Levy, P. S. & Lemeshow, S. 2008); and as it has been determined earlier it is an appropriate method for this research, the data obtained based on providing paper based questionnaires to respondents to get the real world problems that they are facing.

4.2 Sampling

In our research we applied non-probability sampling method to the users and responsible personnel of the e-governance who are familiar with the area of e-governance also other people who has no idea about this term but their occupation is related to the e-governance, to get our appropriate data. It was difficult to find respondents with sufficient experience of e-governance those were categorized in several category like- Government personnel, Student, Business people, Agricultural livelihoods. That's why we used a non-probability sampling method. We always cared of the importance to sample respondent who can be regarded as representative for the group of people that the problem is related to. In our survey it is the users of the e-governance with knowledge and professional background.

Using this non-probability sampling normally there are some disadvantages. One of them is prone to bias the result. But in our research though we have used this non-probability sampling method, we think it did not bias our research because the questions about the problematic issues we have asked to the sample population are same and the issues are very common to the people of Bangladesh.

Normally non-probability sampling has another disadvantage that is sometimes it may not be possible to generalize to program target population. In this research the sample frame are divided in four categories and asked the same series of common question and some are on the point of their professional background. Because those problematic issues are in everywhere almost same in Bangladesh, that's why it also did not hampered in the case of generalization.

Ethical considerations were maintained and accepted for the study. The questionnaire asked and participants were answering the question confidently.

4.3 The questioner

The survey questionnaires are divided into two part general questionnaires, and specific issue questionnaires. In the first part of the survey respondents were asked to identify the general problem that all the users of the system face. In addition they were to respond to general questions about IT expertise levels, their professional background and common problem issues. In the second part of the survey each respondent was asked to what kind of problems they face from their own professional point of view. We made these questionnaires on the basis of our theoretical findings. The questionnaires of our survey included in Appendix A.

The survey questionnaires were sending to respondent by using email and also used some paper based survey. This paper based survey questionnaires is mailed to some person who has experience to do different survey. They distribute these survey questionnaires to the sampling respondent and collected the answer. After one week they mailed respondent's feedback to us including their identity.

4.4 Questioners presentation

The answers of the questionnaires (referred in Appendix A) are represented below using different table and diagrams.

The Percentage of the male and female respondents is shown in figure 2. The pie chart (figure 2) shows the total respondents of the survey are 195. Here 64% or 124 respondents are male and 36% or 71 respondents are female in our survey. The majority of our respondents are male.

Survey questionnaires were distributed to about 355 people. Some of them were well educated and aware of e-governance and some of them had no idea about this term but their professional background is related to the subject area. Among them 142 questionnaire were sent to 142 people by email and rest of 213 people were requested by the field survey team for participating paper based survey.

From e-mail based survey we got 47 responses (33 % response) and form paper based survey we got 148 responses (69 % response). After conducting paper and email based survey our total respondents are 195.

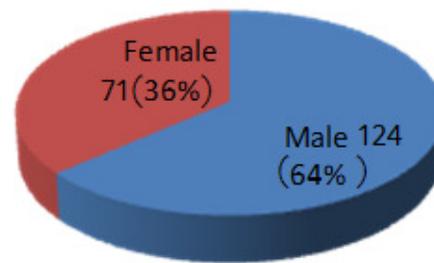


Figure 4: Gender presentation of respondents

The total number of questionnaires were asked to the respondents is 46 (referred in Appendix A). After the researchers screened through respondents answer 37 questionnaires are accepted and presented in tables. Other 9 questions were asked for getting information of the respondents' basic knowledge of IT and some general things which was necessary for this research.

Following Table 3 shows the respondents based on their age and professional background. The age groups of respondents were under 15 years old, 15-24 years old, 25-34 years old, 35-44 years old and above 44 years old. The survey respondents were categorized into 4 sections according to their professional background like student, business people, government personnel and agricultural livelihoods.

Age group	Student	Business people	Government personnel	Agricultural livelihood
Under 15 years old	5	0	0	0
15-24 years old	43	9	3	16
25-34 years old	22	15	18	10
35-44 years old	0	13	15	7
Above 44 years old	0	8	9	2
Total respondents =195	Total student = 70	Total business people = 45	Total government personnel = 45	Total agricultural livelihoods = 35

Table 3: The number of respondents according to their age and professional background

The numbers of respondents are shown in Figure 3 according to their professional background and age.

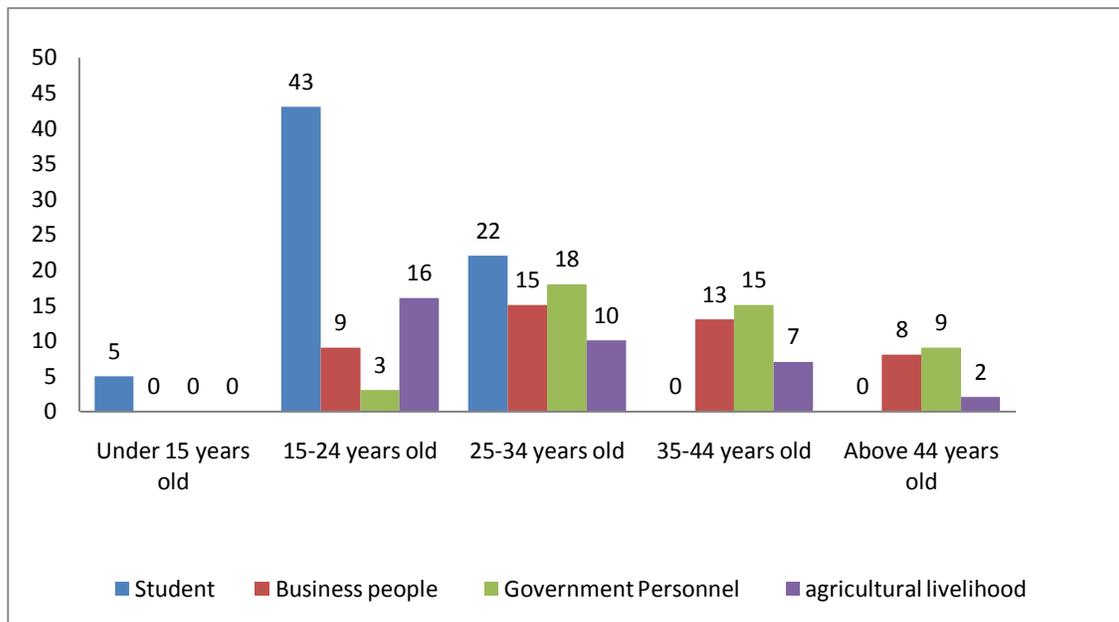


Figure 5: Number of respondents according to their professional background and age

From the above Figure 3 we can see that the total respondents of the age group under 15 years old are 5 which is 2.56% of the total respondents and all of them are students. From the age group of 15-24 years old the total number of respondents is 71 which is 36.41% of the total respondents and most of them are students. The total respondent of the age group of 25-34 years old is 65 which is 33.33% of the total respondents and most of the respondents of this group are also students.

The age group of 35-44 years old the number of respondents is 35 which are 17.95% of total respondents and most of them are government personnel. The total respondent of the age

group of above 44 years old is 19 which are 9.743% of the total respondents and most of the respondents of this group are also government personnel.

The following Table 4 shows the answers of common questionnaires by all respondents.

Basic questions	Frequency	Poor	Fair	Satisfactor v	Good	Excellent	Yes	No	Others
What is the level of your computer experience?	195	50	30	25	15	5	N/A	N/A	70
How you know about e-governance?	195	63	48	45	33	6	N/A	N/A	
Do you using e-governance services?	195	N/A	N/A	N/A	N/A	N/A	58	111	26
Do you think the government services are affected by the human-factor?	195	N/A	N/A	N/A	N/A	N/A	87	71	37
Do you think it is possible to implement e-based system instead of current paper based system?	195	N/A	N/A	N/A	N/A	N/A	85	57	53
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?	195	N/A	N/A	N/A	N/A	N/A	65	112	18
Do you think there is a need of implementing e-governance in Bangladesh?	195	N/A	N/A	N/A	N/A	N/A	105	59	31
Technology is changing rapidly. For this, do you facing any problem?	195	N/A	N/A	N/A	N/A	N/A	57	42	96
Do you feel any resistance to change form paper based to e-system?	195	N/A	N/A	N/A	N/A	N/A	37	52	106
How information in the current government website?	195	95	57	22	15	6	N/A	N/A	
Please give your opinion on the response towards using e-governance services of Bangladesh.	195	77	62	30	12	14	N/A	N/A	
Are you satisfied of your internet facilities?	195	135	22	17	14	7	N/A	N/A	
How easily you can get computer facilities?	195	117	30	27	10	11	N/A	N/A	

Do you think enough training facilities is present to adopt e-governance services?	195	125	27	30	6	7	N/A	N/A	
How costly to get internet services?	195	110	37	23	17	8	N/A	N/A	
Information availability?	195	87	52	26	16	14	N/A	N/A	
How satisfactory level of getting electricity?	195	158	21	10	6	0	N/A	N/A	

Table 4: Common questionnaires answer by all respondents

The following Table 5 shows the answer about communication language by all respondents.

Basic questions	Frequency	National language	English	No Answer
What languages should be use for e governance services to communicate with people?	195	120	27	48

Table 5: Common questionnaire answer by all respondents about communication language

The following Table 6 shows the answers of questionnaire by respondents who are student.

Questionnaires for Students	Frequency	Poor	Fair	Satisfactory	Good	Excellent	Yes	No	Others
How your school curriculum contains about IT?	70	37	15	8	4	6	N/A	N/A	
How is your IT training quality?	70	42	13	10	5	0	N/A	N/A	
How easily you can get information from government side?	70	23	18	20	9	0	N/A	N/A	
Are you getting any study material from government/ school side?	70	N/A	N/A	N/A	N/A	N/A	N/A	57	13
How is your instructor to train you?	70	29	16	12	8	5	N/A	N/A	

Table 6: Specific questionnaires answers by the Student respondents

The following Table 7 shows the answers of questionnaires by respondents who are government personnel.

Questionnaires for Government Personnel	Frequency	Poor	Fair	Satisfactory	Good	Excellent	Yes	No	Others
Do you think the government has enough policy to implement e-governance?	45	N/A	N/A	N/A	N/A	N/A	17	25	3
Do you think the government has enough data to implement this e-governance system?	45	N/A	N/A	N/A	N/A	N/A	12	24	9
Do you think the government has IT skill people to implement this e-governance system?	45	N/A	N/A	N/A	N/A	N/A	15	28	2
Do you think the government has enough financial resource?	45	N/A	N/A	N/A	N/A	N/A	6	32	7
Do you think the government has enough skilled project management people?	45	N/A	N/A	N/A	N/A	N/A	9	28	8

Table 7: Specific questionnaires answers by the government personnel respondents

The following Table 8 shows the answers of questionnaires by respondents who are business personnel.

Questionnaires for Business People	Frequency	Poor	Fair	Satisfactory	Good	Excellent	Yes	No	Others
How structured your business organization?	45	18	8	7	8	4	N/A	N/A	
Do you have any plan to set up an IT department?	45	N/A	N/A	N/A	N/A	N/A	21	19	5
How is your opinion about the government IT Planning?	45	23	12	8	2	0	N/A	N/A	
Do you get the online transaction facility?	45	N/A	N/A	N/A	N/A	N/A	N/A	27	18
How is the quality of	45	19	9	10	7	0	N/A	N/A	

support you get from government to turn your business online?									
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Table 8: Specific questionnaires answers by the business people respondents

The following Table 9 shows the answers of questionnaires by respondents who are agricultural livelihood.

Questionnaires for Agricultural Livelihood	Frequency	Poor	Fair	Satisfactory	Good	Excellent	Yes	No	Others
How easily you get information from the government?	35	N/A	N/A	N/A	N/A	N/A	8	17	10
Government has people to help you getting any kinds of information when you need it through e-service.	35	N/A	N/A	N/A	N/A	N/A	0	12	23
Do you think the government has proper technical people to handle e-service in this sector?	35	N/A	N/A	N/A	N/A	N/A	5	2	28
Infrastructure will support to turn this sectors activity online	35	N/A	N/A	N/A	N/A	N/A	7	5	23

Table 9: Specific questionnaires answers by the agricultural livelihood respondents

4.5 Empirical research results

The results from the empirical study of our research are extracted from the above tables. We found the following problematic issues that are relevant for implementations of e-governance system in Bangladesh. There are some common problems that are related to all sub-questions and some are specifically related to each of our sub-question. Here we first present the common problems that are related to all questions and then we present the problematic issues that are only relevant to specific sub-questions.

Analysis of related to Sub-question one:

What are the general problematic issues that hamper the implementation of e-governance?

- Lack of awareness

- Lack of computer knowledge
- Rapidly changing technology
- Resistance to change paper based system to e-system
- Lack of internet facilities
- Lack of computer facilities
- Cost of computer accessories
- Lack of information availability
- Insufficient electricity
- Native language standardization

Sub-question Two

What are the problematic issues that hamper the implementation of e-governance only in Education sector?

- Lack of training facilities
- Lack of skilled instructor

Sub-question three:

What are the problematic issues that hamper the implementation of e-governance only in Administration sector?

- Lack of policy
- Lack of IT skilled people in the government sector
- Lack of financial resource

Sub-question four:

What are the problematic issues that hamper the implementation of e-governance only in Business sector?

- Unstructured business organization
- Lack of planning
- Lack of support from government

Sub-question five:

What are the problematic issues that hamper the implementation of e-governance only in Agriculture sector?

- Lack of IT skilled personnel
- Computer illiteracy

4.6 Empirical findings addressing into the Onion Ring model

Information:

According to the Onion Ring model as mentioned before (in section 3.5) information is at the heart of any e-development. From our empirical findings we identified the 'Lack of information availability' is one of the problematic issues for implementing e-governance. In Bangladesh most of the organizations are not cooperative to provide necessary information to implement e-governance system. To get a user accepted e-governance all organization should be cooperative in that case.

Technology: According to Onion Ring model we got the following technological problematic issue that should be addressed for when implementing e-governance system in Bangladesh.

- Lack of computer knowledge
- Rapidly changing technology
- Lack of internet facilities
- Lack of computer facilities

Information System: According to Onion Ring model we got the following Information system problematic issue that should be addressed for when implementing e-governance system in Bangladesh.

- Lack of skilled instructor
- Lack of IT skilled people in the government sector
- Lack of IT skilled personnel
- Computer illiteracy

Environment: According to Onion Ring model we got the following Environment problematic issue that should be addressed for when implementing e-governance system in Bangladesh.

- Lack of awareness
- Resistance to change paper based system to e-system
- Cost of computer accessories
- Insufficient electricity
- Native language standardization
- Lack of training facilities
- Lack of policy
- Lack of financial resource
- Unstructured business organization
- Lack of planning
- Lack of support from government

5 ANALYSIS AND RESULT

The results from the theoretical and the empirical parts of the research are analyzed and compared with each other. Differences and similarities between the two parts of the research are identified. The results are visualized through texts.

5.1 Analysis of result

Analysis of related to Sub-question one:

What are the general problematic issues that hamper the implementation of e-governance?

- ❑ There are different nations in the world and each of them has their own language and culture. Normally people always feel comfort when they use their native language for communication and learning purpose. In a developing country like Bangladesh where literacy rate is 56.5% (UNDP. 2010) which is very low, here in case of introducing new feature of ICT or giving computer training, it must be introduce their own language. Otherwise it will not bring any satisfactory level of result.

Now current situation in Bangladesh is maximum ICT feature or computer program are introducing in English language that is not in native language for this country people. So it is difficult to get acceptance from mass level of population. We get the result from our survey respondent is that 61.54% people wants all of this services in their national language, 13.84% wants this services in English and rest of the 24.61% have no concern of this matter.

- ❑ Inadequate access to electricity remains one of the biggest stumbling blocks to create a comprehensive ICT infrastructure. For running any ICT based services like e-governance successfully, constant electricity supply is essential. In developing country like Bangladesh where load shedding is a normal phenomena. In Bangladesh everyday electricity demand and supply gap is 1500MW where total demand is around 5000MW. More ever large part of the country is still out of electricity. In that case 81.02% respondent in our survey said that electricity supply is poor. That is the major problem while implementing ICT based services.
- ❑ Many e-governance or computerization projects of Bangladesh government suffer badly from inadequate training facilities. Training opportunity is vital necessity for introducing users with e-governance and breaking their fears (Alam, M. 2007). Training was listed by 60% of the respondents said it was Poor in the five answer category Excellent, Good, Satisfactory, Fair and Poor where none of the respondent said it is Excellent. In this particular aspect we got one of the highest responses when compared to all others. Training is truly the linchpin of effective IT implementation. Without the support and expertise of individual end users, no system can achieve its full potential.
- ❑ In Bangladesh very few government offices have Internet facilities. Even smaller numbers have internal networks. However, it is also true that a number of government offices have computers that remain almost unused due to lack of integrated planning (Alam, M. 2007). In adequate IT infrastructure and lack of planning was listed 64%

and 58% was listed as Poor in the six answer category Excellent, Good, Satisfactory, Fair, Poor and others where none of the respondent said it is Excellent.

- ❑ Rapidly changing technology is problematic for IT implementation in the same way it is for the planning process. This was viewed as a highly problematic issue for 53% of the respondents. The crux with regard to this part of the process is the inevitable time lag between planning for ITs and actual implementation. If the users did not move with the changing of technology they may be disconnected from its track.

Analysis of related to Sub-question Two

What are the problematic issues that hamper the implementation of e-governance only in Education sector?

- ❑ Main part of the ICT infrastructure is accessible devices. In Bangladesh the statistics of having a computer is 4.5 per 1000 person that is very low figure for getting service from the ICT sectors for education purpose. In Bangladesh getting internet facility is so costly and its speed also too slow. This shortage of computer equipments and internet facilities follows a great impact on training and establishing ICT based services. From our survey we identified that about 60% of the student respondent mentioned their quality of training is poor because of this reason.
- ❑ Gender inequality is one of the common issues in developing country like Bangladesh (Digital Bangladesh). Here half of the population is female and they are always backward in every sector in the society. In terms of getting educational facility it is especially mentionable.
- ❑ In the ICT sector condition of training facility is not enough in Bangladesh. Sometimes in spite of having interest to learn usages of computer facility but they cannot because of high quality trainers are costly and hard to find (Digital Bangladesh.). The number of training institute is very less and it is also a big obstacle to get the training facility. Here medium of instruction also play a vital role to get proper computer education.

Analysis of related to Sub-question Three

What are the problematic issues that hamper the implementation of e-governance only in Administration sector?

- ❑ The problematic issue that hampers the e-governance implementation mostly is the lack of skilled manpower in decision making positions. This also causes the problem of making the wrong decision and not supporting enough for good quality implementation. From our survey we observed that 62.22% people said that they don't have enough IT skill, 33.33% said that they have IT knowledge and 4.44% people said that they have no concern about it.
- ❑ Other problematic issues are that the people are more concerned about the loss of the important data as they do not trust the computer system due to the lack of awareness and concerns about the security.

Analysis of related to Sub-question Four

What are the problematic issues that hamper the implementation of e-governance only in Business sector?

- ❑ Most of the business organizations in Bangladesh are not well structured. Most of the business organizations do not have their own IT department. They are doing their business transaction in traditional system which is paper based. From our survey we got 46.67 % people those who are involved in business are interested to set up IT department in their organization.
- ❑ To turn a business from a paper-based to e-based company, the most important requirement is to have e-banking facility. E-banking is a global phenomena and Bangladesh is far behind to reach the expected level in global banking system (Raihan, A. 2001). Most of the Bangladeshi banks are doing their banking tasks in traditional methods. Very few banks provide banking services via the internet that included only account balance enquiry, account summary, account details and account activity. But the important terms like balance transfer, bills payment, loan repayment, loan information, statement request, refill prepaid card, pay credit card dues, view credit card statement are still absent in here. So Internet banking is still absent in Bangladesh (Raihan, A. 2001).

From our survey we returned the result that is 60% of the respondent replied they didn't get any online transaction and rest of 40% respondent is not used with it. It's a drawback for implementing e-governance in this sector. They also replied about the support they get from government is unsatisfactory.

Analysis of related to Sub-question Five

What are the problematic issues that hamper the implementation of e-governance only in Agriculture sector?

- ❑ In Bangladesh most of agricultural livelihoods are farmers that live life below poverty level. In addition most of them are illiterate. So they are far away from the knowledge of computer education. It is very hard to adapt with any ICT based service without having computer literacy and basic education. To give them information from the ICT based system or helping them to use the system some rural institute is essential. In Bangladesh this type of institute are really in poor condition. From our survey we got 34.29 % of agricultural livelihoods are not getting any kinds of information from e-agriculture services when they need and rest of 65.71% of them are not concern of it, because they have no idea about it. So now it is impossible for those people to become beneficiate by getting information from ICT based system and make it successful.
- ❑ Rural institutions don't have enough strength to provide the necessary information regarding the information that is required to the connected people around it. The reason behind it can be the lack of government concern, lack of adequate literacy, lack of funding and so on.

- ❑ Education is the key factor to progress for any community. In the agricultural sector the people engaged with it have the lack of education, the education that is required to know the basis of IS implementation and use of it is also absent which causes the problem.

5.2 Result summary

The results that we found in our research are listed below according to our research question.

Sub-question one:

What are the general problematic issues that hamper the implementation of e-governance?

- Lack of planning
- Lack of ICT infrastructure
- Lack of awareness
- Lack of Training facilities
- Lack of internet facilities
- Cost of computer accessories
- Lack of computer knowledge
- Lack of native language standardization
- Lack of information availability
- Resistance to Change
- Electricity crisis
- Rapidly Changing Technology

Sub-question two:

What are the problematic issues that hamper the implementation of e-governance only in Education sector?

- Lack of support from government
- Gender inequality
- Lack of skilled instructors

Sub-question three:

What are the problematic issues that hamper the implementation of e-governance only in Administration sector?

- Lack of policy
- Having inadequate data
- Lack of IT skilled people in the government side
- Lack of financial resource

Sub-question four:

What are the problematic issues that hamper the implementation of e-governance only in Business sector?

- Lack of e-banking facility
- Lack of support from the government
- Lack of skilled people
- Unstructured business organization

Sub-question five:

What are the problematic issues that hamper the implementation of e-governance only in Agriculture sector?

- Lack of Agricultural environment
- Weak rural institutions
- Uneducated agriculture livelihood
- Lack of enabling rural investment climate

6 DISCUSSION

6.1 Conclusions

The primary focus of this study was to determine the issues that are perceived as being the most problematic with regard to e-governance implementation according to user's perspective. E-governance implementation in each sector has faced some individual problematic issues. The followings are brief discussion of the findings of this study with regard to the main research question.

When we conducted our research we concluded that ICT infrastructure is the most important problematic issue in implementing the e-governance. Without proper ICT infrastructure it is not possible to implement the e-governance in a developing country. First of all it is necessary to have a proper ICT infrastructure to implement e-governance.

Without having proper awareness among the users of the e-governance system it is not possible to set up an effective e-governance system. Users should have enough knowledge about the e-governance system and its services. In that case government should takes necessary steps to increase the awareness among the users level like- arranging seminar-meeting, special training session etc.

Proper planning is an important aspect for implementing a successful e-governance system. In the planning phase every user's aspect should be followed. Without a proper plan, e-governance systems implementation can't reach its target goal. In our research we have seen that because of inappropriate planning some of Bangladeshi e-governance sector are not receiving there users acceptance.

For implementing any e-governance systems financial resources must be in place. Normally these developing countries are always in financial crisis. Because of the lack financial resource many e-governance projects in the world have failed in its middle stage. Proper budget should be allocated for a successful implementation of e-governance.

The electricity crisis is a common phenomenon in the developing countries. However electricity is the main component that will bring the vision of e-governance to the users. Government should give their attention to reach the electricity in a satisfactory level so that people can use the e-governance facility without hamper.

In Bangladesh people have a long standing history with paper-based systems. It's also seen as a difficult problem to turn them from paper based system to e-based system. In that case government can do some campaign, add, to make aware about the new e-governance system so that they can feel less resistance to turn there.

Literacy is one of the greatest challenges in the developing world. In Bangladesh its rate is only 56.5% that is not satisfactory level at all. Here computer literacy is also less than the normal literacy level. There is no alternative to increase the computer literacy in order to make effective e-governance. In that case governance should give more attention add some criteria about computer study from school level. For the people who have no opportunity to study in the school, government can arrange some computer training program so that they can learn and became beneficial.

In our study we have seen banking sectors have huge influence to turn the e-governance system effective. To make the e-governance system effective internet banking facility should be there so that users can do their banking task easily.

According to our research there are so many problematic issues on which government should look about it to make e-governance effective.

6.2 Implications for Informatics

The area of informatics can be regarded in a dialectical relationship between the user and the developer practices. The implications of our results for the users practice are an influence on the e-governance user's communities. The result shows that the different problematic issue should minimize or develop in order to get a user accepted e-governance. Here most of the respondents believed that the proper IT infrastructure should build in a satisfactory level for implementing effective e-governance in every sector.

Another implication for the user practice is that it is also probably necessary to have proper skill to become a good user of the e-governance systems. This indicates that users should receive proper training facility about use of information system.

The implications of the results for the developer practice are that for a successful implementation of e-governance developer should be focused on all kinds of users and IT infrastructures when they analyses and design the system.

Another important implication for the developer practice emanates from the fact that social interaction through awareness is necessary for true learning and development in general, the successful implementation of the e-governance systems. The developers must thus also take some step to increase the awareness about the e-governance to the user's level so that developer practice becomes less complicated.

6.3 Method evaluation

The purpose of the text analysis has been to find relevant problematic issue in different subject areas and relate these to the individual users of the e-governance system. This component in our method has thus made it possible to relate our research questions to previous research. The difficulty with this component has primarily been sampling of literature. To create information about the problematic issue we have also used concepts from different subject areas and it has also sometimes been difficult to combine these into a whole since different concepts sometimes overlap each other.

In our empirical study we have made the questionnaire on the basis of what we have got from our theoretical study. We distribute these questionnaires to the people who faced those problematic issues in their real world life. Our impression is that questionnaires were a good method to get information to verify the aspects found in the theoretical study. We got much more information than we had expected. On the basis of respondent's response and comparing this with our theoretical findings we have concluded our research result.

6.4 Result evaluation

The main principle of external validity is the procedure of generalization, whether result comes from a small sample group, can be extended to make predictions about the entire population. In our research first we have conducted theoretical study to find out the e-governance implementation problems that has been previously done by other researchers in developing countries. On the basis of those theoretical findings we have conducted survey through questionnaires to get the real world problems that are face by the users of the system. We have sampled our population on the basis of their professional background. We choose student for getting the real world problematic issues that are existed in the education field because they were the best who experienced the real world problems there. We choose business people getting the real world problematic issues that are existed in the business field because they were the best who experienced the real world problems there. We have choose government personnel for getting the real world problematic issues that are existed in the administrative field because they were the best who experienced the real world problems there. From this survey we got our empirical findings. After that we discussed our empirical result with theoretical result. Then we generalized result summary of our research. According to our research the result validation aligned with external validation method.

6.5 Possibilities to generalize

In our research we used both primary and secondary data. The secondary data collected from different relevant literature and paper those are published in different journals, government publications, international publications, administration journals, books, periodicals and long list of web sites. With this we gathered primary data from relevant system users by survey using structured questionnaires. This field survey conducted for knowing different problems that have been facing or will be faced by the users of the e-governance. We used a survey team those are experienced in doing survey before. They choose school, college and university students for gathering data of education related questions. With this they went different government organizations and the sectors those are concern with e-governance and able to answer the questionnaires. They went to different business organization and rural areas to get information from business people and agricultural livelihoods. They collected questionnaire answer by Yes, No, Others scale and some are in Excellent, Good, Satisfactory, Fair, Poor and Others scale. We sampled the users of the e-governance in several categories according to their background. For doing this we applied non-probability sampling method to the users and responsible personal of the e-governance people who are familiar with the area of e-governance to get our appropriate data.

6.6 Ideas for continued research

There are also some problematic issues that hamper implementation of e-governance if we study from the provider or government side. It would be interesting to see what a study of further aspects of government could result in.

Our empirical study has found the problematic issues that are common and some other in education, administration, business and agricultural sectors. Is the problematic issues faced in

other sectors are same? If the main problematic issue are solved then other will be minimize automatically?

The present study focuses on a broad area concerning knowledge creation problematic issues that hampers to implement the e-governance from the users point of view. In future research it is also possible to concentrate more on just a few aspects and study them more thorough.

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Appendix A



UNIVERSITY OF BORÅS
SCIENCE FOR THE PROFESSIONS

Survey questionnaires

Dear respondent, we are pursuing master in Informatics at University of Borås, Sweden by full dissertation, under title of “Problems when implementing e-governance systems in developing countries: a quantitative investigation of implementation problems in Bangladesh”. Below is the survey questionnaire to collect the relevant data. We would be grateful, if you would provide answer of the following question which carries out our research work. Thank you for your precious time.

1. What is your age?

- Under 15 years old 15-24 years old 25-34 years old 35-44 years old
 Above 44 years old

2. What is your gender?

- Male Female

3. What is the level of your education?

- School College University Others

4. Do you know about e-governance?

- Yes No Others

5. Do you using e-governance services?

- Yes No Others

6. Do you think the government services are affected by the human-factor?

- Yes No Others

7. What kind of services provided by e-governance do you used?

- Getting information of general facts Administration Agriculture

Business Education Healthcare Others None

8. Do you think human-factor could be avoided/ minimized by using computers?

Yes No Others

9. Do you think it is possible to implement e-based system instead of current paper based system?

Yes No Others

10. 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 Others

11. Do you think there is a need of implementing e-governance in Bangladesh?

Yes No Others

12. What way of e-Governance services is the most suitable for you?

Web based Cell phone Traditional

13. How much money government should put in developing e-governance system?

As low as possible Enough to provide better services As much as needed

14. What languages should be use for e governance services to communicate with people?

National language English No answer

15. Do you feel any resistance to change form paper based to e-system?

Yes No Others

16. Technology is changing rapidly. For this, do you facing any problem?

Yes No Others

This section question is measured in 6 point scale: 1-poor, 2- fair, 3-satisfactory, 4-good, 5-excellent and 6-others

17. Please give your opinion on the response towards using e-governance services of Bangladesh.

1 2 3 4 5 6

18. What is the level of your computer experience?

1 2 3 4 5 6

19. How information in the current government website?

1 2 3 4 5 6

20. How you know about e-governance?

1 2 3 4 5 6

21. Are you satisfied of your internet facilities?

1 2 3 4 5 6

22. How easily you can get computer facilities?

1 2 3 4 5 6

23. Do you think enough training facilities is present to adopt e-governance services?

1 2 3 4 5 6

24. How costly to get internet services?

1 2 3 4 5 6

25. Do you think changing technology hamper to develop this system?

1 2 3 4 5 6

26. Information availability?

1 2 3 4 5 6

27. How satisfactory level of getting electricity?

1 2 3 4 5 6

If you are student please answer these questionnaires:

1. Are you getting any study material from government/ school side?

Yes No Others

This section question is measured in 6 point scale: 1-poor, 2- fair, 3-satisfactory, 4-good, 5-excellent and 6-others

2. How your school curriculum contains about IT?

1 2 3 4 5 6

3. How is your IT training quality?

1 2 3 4 5 6

4. How easily you can get information from government side?

1 2 3 4 5 6

5. How is your instructor to train you?

1 2 3 4 5 6

If you are government personnel please answer these questionnaires:

1. Do you think the government has enough policy to implement e-governance?

Yes No Others

2. Do you think the government has enough data to implement this e-governance system?

Yes No Others

3. Do you think the government has IT skill people to implement this e-governance system?

Yes No Others

4. Do you think the government has enough financial resource?

Yes No Others

5. Do you think the government has enough skilled project management people?

Yes No Others

If you are Business people please answer these questionnaires:

1. Do you have any plan to set up an IT department?

Yes No Others

2. Do you get the online transaction facility?

Yes No Others

This section question is measured in 6 point scale: 1-poor, 2- fair, 3-satisfactory, 4-good, 5-excellent and 6-others

3. How structured your business organization?

1 2 3 4 5 6

4. How is your opinion about the government IT Planning?

1 2 3 4 5 6

5. How is the quality of support you get from government to turn your business online?

1 2 3 4 5 6

If you are Agricultural livelihoods please answer these questionnaires:

1. How easily you get information from the government?

Yes No Others

2. Government has people to help you getting any kinds of information when you need it through e-service.

Yes No Others

3. Do you think the government has proper technical people to handle e-service in this sector

Yes No Others

4. Infrastructure will support to turn this sectors activity online?

Yes No Others

University of Borås is a modern university in the city center. We give courses in business administration and informatics, library and information science, fashion and textiles, behavioral sciences and teacher education, engineering and health sciences.

In the **School of Business and Informatics (IDA)**, we have focused on the students' future needs. Therefore we have created programs in which employability is a key word. Subject integration and contextualization are other important concepts. The department has a closeness, both between students and teachers as well as between industry and education.

Our **courses in business administration** give students the opportunity to learn more about different businesses and governments and how governance and organization of these activities take place. They may also learn about society development and organizations' adaptation to the outside world. They have the opportunity to improve their ability to analyze, develop and control activities, whether they want to engage in auditing, management or marketing.

Among our **IT courses**, there's always something for those who want to design the future of IT-based communications, analyze the needs and demands on organizations' information to design their content structures, integrating IT and business development, developing their ability to analyze and design business processes or focus on programming and development of good use of IT in enterprises and organizations.

The **research** in the school is well recognized and oriented towards professionalism as well as design and development. The overall research profile is Business-IT-Services which combine knowledge and skills in informatics as well as in business administration. The research is profession-oriented, which is reflected in the research, in many cases conducted on action research-based grounds, with businesses and government organizations at local, national and international arenas. The research design and professional orientation is manifested also in InnovationLab, which is the department's and university's unit for research-supporting system development.



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