

Reducing Digital Divide Gap and Information Communication Technology (ICT): Status in Bangladesh

Md. Mizanur Rahman*
Sumon Kumar Mozumdar**

Abstract

Reducing digital divide gap is a major challenge in Bangladesh due to the information and communications technology (ICT) boomed, enabling rapid and worldwide dissemination of information to those with access. However, the rapid transfer of information benefits the developed nations more than the developing ones, giving rise to concerns of a digital divide. So the most appropriate definition of Digital Divide was provided by UNESCO in 2001 the digital divide as ‘ a phenomenon that results from the unequal application of, and access to, information and communication technologies leading to a global knowledge gap between information ‘haves’ and ‘have not’s. For the purpose- both primary and secondary data has been collected by using survey method. Primary data have been collected through questionnaire. This questionnaire consists of lists of open ended and close ended questions and also includes 5-point Likert Scale. Very positive attitudes with the statement rated at 5 point and negative attitudes rated at 1 point. Qualitative techniques like Focus Group Discussion (FGD) and depth interview were also used to collect primary data. Results provide insights into reducing digital gap and ICT status in Bangladesh.(add here some findings)

Keywords: ICT (Information Communication Technology), (FGD) Focus Group Discussion, United Nations Educational, Scientific and Cultural Organization (UNESCO).

Introduction

Introduction, adoption and implementation of sophisticated affordable information and communication technologies (ICTs) are a common trend now in all the developed countries of the world. Since the invention of Internet in 1969 by ARPANET and WWW in 1990 by Tim Berners-Lee, the world has witnessed ceaseless development of ICTs. The intention of easy and quick processing of and access to information is responsible for this ICT revolution.

* Associate Professor, Department of Management Studies, Jagannath University, E-Mail: mizan223@yahoo.com

** Lecturer, Department of Management Studies, Jagannath University, E-Mail: kumar_sumon47@yahoo.com

Since present time is addressed as an information age, and nations worldwide are trying to establish knowledge based societies; instant access to right information is a prerequisite. In fact quick access to information has become key determinant of personal, national, regional and after all global development. Despite all the efforts of ICT development and usage, a major percentage of world's population especially of the least developed and developing countries is unable to avail ICTs to get access to latest information due to negligence, unawareness, ICT illiteracy, etc. In reality, the growth of new technologies has exacerbated the already extreme differences between the rich and the poor countries and between the poor and the rich; men and women in poorer countries.

In this century resource-poor farmers in developing countries are adopting the use of mobile phones to obtain agricultural market price information. Community based organizations are tuning in to FM radio stations to listen to broadcasted fact sheets on food security issues and information on climate, post-harvest operations, early warning systems, food safety and nutrition and, how to improve their crop yields. Furthermore, there is a growing discrepancy between those who have access to information and those who do not. Those in the second group are the majority, and most of them live in rural areas of developing countries like Bangladesh. Bangladesh (BD) (a country with a population of more than one hundred and sixty million) suffering badly from acute shortage of ICT facilities and skills at different categories of its population, organizations and so on (shown later in this article). The causes behind these divide are underdeveloped economy, low education rate, bureaucratic indifferent attitude etc. Though some initiatives have been taken at government and private sectors to minimize the digital gap, these are not enough to bridge the multidimensional digital gaps in Bangladesh.

Statement of the Problem:

Reducing digital divide gap is a major challenge in Bangladesh because of Advancement in Information and Communication Technology (ICT). So there is an undeniable wave of awareness about e-governance in the polity of Bangladesh at present. This awareness is, at least partially, motivated by one of the predominant political agenda of 'Digital Bangladesh' of the present government in power. In spite of this 'wave' there is a common feeling among the conscious citizens that the manifestation of the vision is not clear to people, including the politician and even the rural people. The People's Republic of Bangladesh was declared a vision that Bangladesh will be digitalized within 2021.

Against the backdrop of significant advancement in Information and Communication Technology (ICT) and extensive globalization, Digitalization is an issue on which all the stakeholders have a consensus to adopt. In spite of some success in this area there is no space for Bangladesh to be complacent. Achievement of true Digitalization does not seem to be an easy task in the face of myriad of problems to embrace if we cannot involve rural people. Without involvement of rural people, the digitalization process is not possible. An objective analysis of the situation in this regard will definitely provide in valuable insights about what needs to be done to minimize "digital divide" a priority basis. My research question is—

1. What is the condition of digital divide existing in Bangladesh?
2. What are the major factors that may enhance or impact the Digital Bangladesh?

Objectives of the Study:

The objectives of the study are divided in the following categories. Considering the statement of research problem, the objectives are as follows-

- To know the Information Technology Infrastructures (IT) level in Bangladesh.
- To know the (IT) knowledge or technical skill of general public.
- To know the attitudes rural people of digitalization.
- To examine the major factors that affect e-governance preparedness of the Digitalization.
- To know the users and non users internet in Bangladesh.
- To determine the gap between Government initiatives regarding ICTs and digitalization for the betterment of public services.
- To provide possible recommendations regarding digital divide in Bangladesh.

Methodology of the Study:

a. Research Design:

The research is descriptive in nature.

b. Target Population:

For this survey two groups of population have been selected.

Population-1: General people from Dhaka, Magura, Jessore districts who use information technology (IT) and access to Internet.

Population-2: General people from Dhaka, Magura, Jessore districts who cannot use information technology (IT) and not access to Internet.

c. Sample and Sample Size:

60 samples from Dhaka, Magura, Jessore districts have been investigated in this survey. The composition of the respondents was as follows__

Study Area	Stratum	No. of Respondents
General people from Dhaka, Magura, Jessore districts	Population-1	30
	Population-2	30
Total		60

d. Data Collection Technique:

Both primary and secondary data have been collected in this survey. Primary data have been collected through questionnaire. This questionnaire consists of lists of open ended and close ended questions and also includes 5-point Likert Scale. Very positive attitudes with the statement rated at 5 point and negative attitudes rated at 1 point.

Qualitative techniques like Focus Group Discussion (FGD) and depth interview were also used to collect primary data. FGD was conducted on six persons from various departments. This combination is as follows-

Serial	Interviewee's organization	No. of Interviewee
1	Ministry of Science and Information & Communication Technology (MoSICT)	1
2	Ministry of Posts and Telecommunications (MoPT)	1
3	Bangladesh Telecommunication Regulatory Communication (BTRC)	1
4	Access to Information Project	1
5	Renowned ICT/E-governance Expert	2
total		6

Secondary data have been collected from various articles, publications, books, news published in daily news papers, websites and etc.

ICT Status and Digital Divide in Bangladesh:

ICT status of Bangladesh is inadequate. Though the first Mainframe computer came to Bangladesh in 1964, the use of PC became popular very late to the common people. The Internet came late in Bangladesh, with UUCP e-mail beginning in 1993 and IP connectivity in 1996. Bangladesh got SEA-ME-WE-4 submarine cable connectivity on 21 May 2006. Currently there are 205 ISP; of these almost 80% ISPs are located in Dhaka. Including the government own BTCL a huge number of private organizations, i.e. mobile phone operators, private entrepreneurs and local broad band service providers are involved in the spread of internet service throughout the country. Initially the internet services were limited to Dhaka city. However with the initiative of government own BTCL, it expanded to all district towns of Bangladesh though the cost of internet is still high in most district towns due to limited users. Bangladesh saw an internet revolution when City cell, a privately owned mobile company started to offer City Cell Zoom- an internet package for the mobile users and for all having modem to use City Cell SIM card. Now almost all mobile operators offer mobile internet service for their respective users. According to the Internet World Stats as of August, 2010 there are currently 995,560 internet users in Bangladesh and the internet penetration is 0.6%.

Recently Bangladesh government has adopted a national ICT Policy-2009 which includes action items for realizing the goals of national development. Earlier national ICT Policy was published in 2002 aiming at building an ICT driven knowledge based society by the year 2010. National ICT Policy-2009 consists of 10 broad objectives, 56 strategic themes and 306 action items. Bangladesh has seen a telecom revolution recently. The following figure table shows the existing mobile operators and mobile users in Bangladesh.

Operators	Subscribers (in millions)
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Grameen Phone Ltd. (GP)	47.642
Banglalink Digital Communications Limited	28.932
Robi Axiata Limited (Robi)	25.611
Airtel Bangladesh Limited (Airtel)	8.263
Pacific Bangladesh Telecom Limited (Citycell)	1.380
Teletalk Bangladesh Ltd. (Teletalk)	2.980
Total	114.808

Table: Mobile Phone Subscribers in Bangladesh January 2014

Initiatives to Bridge Digital Divide Gap:

The disparity in access to ICTs is a burning issue now which has noticed the attention of institutions like Digital Opportunity Task Force of the G8 countries, the World Summit on Information Society (WSIS), and so on. By their continuous campaign developed countries, UN agencies and donor agencies have come forward to uplift the poor ICT infrastructure and human capacity of less developed countries. Such initiatives are visible in Bangladesh. At the commencement of 21st century, Bangladesh government being a member of different global associations starts taking pragmatic initiatives to enhance affordable ICT development. Bangladesh government has taken a policy to launch collaborative programmers with donor agencies as development partners as well as stakeholders and NGOs in the country to alleviate the digital divide situation here. Some of these programmers are__

Bangladesh-Korea:

South Korea has been extending support toward the socio-economic development of Bangladesh since the establishment of diplomatic ties in 1973. Bangladesh accepted a grant assistance of \$36 million for the time span of 1991-2009 from South Korea through KOICA, a Korean aid agency and other Korean agencies. Of this grant assistance, a significant part was defined to create an ICT friendly working environment in different government offices, schools and universities, by building training centre's, helping in the development of training curriculum, etc. Some of these leading initiatives by Korea in Bangladesh are__

Bangladesh-Korea institute of ICT

Korea International Cooperation Agency (KOICA) built this training facility in BCC's (Bangladesh Computer Council) head office in capital city Dhaka which started working in September 2005. The institute mainly arranges training sessions for government personnel with a view to develop their ICT skills that will ensure the government's initiative of e-government to a success. Up to December 2008, about 800 government officials and 35,000 general people have taken training in various ICT applications from this institution.

Bangladesh-Korea ICT training center for education

In 2005 Bangladesh Bureau of Educational Information and Statistics (BANBEIS) and Korea International Cooperation Agency (KOICA) jointly initiated a project entitled Establishment of Bangladesh-Korea ICT Training Center for Education (BKITCE) the duration of the project was July 2006 to June 2009. The prime objective of this project was to build appropriate IT infrastructure by setting up and operating a state-of-the-art Training Centre in the country with 5 (five) ICT labs in BANBEIS Computer Division. Under the project ICT education and training was provided to the central and field level officials/staff as well as teachers at secondary and higher secondary levels.

Bangladesh-Korea Information Access Centre (IAC)

Bangladesh-Korea Information Access Centre (IAC) at the Department of Computer Science and Engineering (CSE), BUET was inaugurated on December 17, 2008. This is the first Information Access Centre established by Korean Agency for Digital Opportunity and Promotion (KADO) in Bangladesh with the aim of supporting ICT development here and promoting bilateral collaboration between the People's Republic of Bangladesh and the Republic of Korea under a Memorandum of Understanding (MOU) signed between BUET and KADO on October 20, 2008. Under this MOU, BUET has provided 3 rooms in which KADO has established the IAC comprising an IT training laboratory, a Seminar Room, and an internet lounge. KADO has performed the interior decoration of this centre and furnished and installed IT equipment. Along with conducting regular classes of the department, the facilities of the centre is used to grow IT awareness of people by offering various IT programs on non-profit basis.

Korea aided project for e-file management systems

The Establishment Ministry of Bangladesh and KOICA signed an agreement for the implementation of an ICT project on 26 May, 2010. It is expected that during the two years of this project, an e-file management system will be implemented for the ministry. KOICA will provide e-file management system software and all other necessary IT accessories along with interior renovation for the ICT training room at the Public Administration Computer Centre of the concerned ministry.

Bangladesh Open University (BOU) project

KOICA is intending to assist Bangladesh Open University to launch a very efficient Learning Management System (LMS) and ICT based Web Integrated ODL university management system to envisage the enhancement of distance education to reach the remote areas of the country through launching ICT based educational tools.

Finance Ministry and KOICA project

Ministry of Finance, Bangladesh took financial and technical support from KOICA to implement the project entitled Strengthening ICT Training and System of Bangladesh Bureau of Statistics (BBS). The project duration covered two fiscal years of 2008 and 2009. The main objectives of the project were to upgrade the statistics production and analytical

capacity of the BBS with the introduction of a modern database system and improve the statistical processing ability of BBS officials through advanced training.

Bangladesh-Microsoft:

During Bill Gate's visit to Bangladesh in 2005, Microsoft signed a memorandum of understanding with the Ministry of Education, Bangladesh to train over 10,000 teachers and over 200,000 students at primary and secondary levels. It was an effort by the Partners in Learning Grant program, a component of Microsoft's Partners in Learning Initiative program worldwide. The program was intended to be implemented through the following three years. In addition to this, alliances were also established and agreements were made with 10 of the leading universities in Bangladesh to ensure easier access and exposure to the latest software and technology at affordable prices for teacher and students.

Bangladesh-Intel:

Intel Corporation made an attempt to help bridge the digital divide in Bangladesh through its Intel World Ahead Programmer. In this regard, in 2008, Intel Corporation signed some Memorandum of Understandings (MoU) and conducted discussions with ministry of education and other agencies to__

- supply 1,000 personal computers to schools in 64 districts of Bangladesh with a view to introduce information technology based education system in the country
- ensure cost effective Internet connectivity at these schools
- Help setting up targeted 40,000 Tele-centers across the country by 2011, in collaboration with Grameen Solution and Bangladesh Tele-center Network, to work as a service delivery platform for farmers, workers, students and all kinds of people.
- Provide cost effective computers to rural students Though Bangladesh government already have such kind of collaboration with many other donor agencies, Intel urged to build a long term planning for ICT development in Bangladesh.

Bangladesh-UNDP:

In order to provide service at doorsteps through ICTs for its citizens, Bangladesh government has taken a massive development programmer called Access to Information (A2i) with technical and a major financial assistance from UNDP, Bangladesh. A2i programmer started its journey in 2006. Expected outputs of A2i are:

- Enhanced e-service for citizens
- Quality of public servants enhanced
- E-Governance quick-win initiatives enhanced
- Multi sector e-Governance initiatives formulated

Achievements of A2i regarding ICT infrastructure and human capacity building along with increasing access to digital technologies are:

- 1) Development of district web portals for 64 districts of Bangladesh in order to provide necessary information to rural people. For further enrichment of these portals, such as making citizen compatible web content and communication tools with a view to close the gap between government and people, a competitive phenomenon has been created among ministers of respective districts with the holding of “Digital Innovation Fair”. By these fairs newly invented digital facilities are brought to the sight of local people.
- 2) Implementation of Union Information Centre (UIC). It is a joint venture of A2i and Local Government Division of LGRD Ministry. Already 1000 UICs have been established and there is an aim to set up a UIC at every union of Bangladesh by 2011. The UICs will be set up at Union Council Complexes of respective unions. Services of these centers, at a lower cost, will include:
 - Internet connection to facilitate access to world’s knowledge repository.
 - Offline collections of videos, audios, animations, information on agriculture, health, education in text format.
 - Training facilities on computer and related courses.
 - Computer aided commercial services such as composing, printing, scanning, photography, etc.
- 3) A2i has made significant contribution to the following policy reforms:
 - Finalization of the Telecom Policy 2010 and Rural Connectivity Policy 2010.
 - facilitating National e-Governance Architecture group and Cyber Security Committee
 - Intervention to such policies as Right to information and National ICT policy.
 - ICT in Education Master Plan
 - Significant modification has been brought on the draft policy of Public Private Partnership (PPP). The concept of PPP is a new inclusion to the budget of Bangladesh government in the fiscal , July 2010-June 2011
- 4) Inauguration of digital purjee management system in 15 sugar mills of Bangladesh by Prime Minister on 12 December, 2010. It is the aftermath of the pilot project of e-purjee at Faridpur and Mobarakganj Sugar Mills conducted by Access to Information (A2i) program at the Prime Minister’s Office along with and funded by Bangladesh Sugar and Food Industries Corporation (BSFIC) under the Ministry of Industries and UNDP, Bangladesh. Purjee is the permission letter from a farmer for the purchase of his produced sugarcane by a sugar mill.
- 5) Development of online General Diary (GD) filing system at 41 police stations of Dhaka Metropolitan Police

Some other initiatives of the A2i program planning to implement in near future are:

- A2i has been involved with the work of Domestic Network Coordination Committee (DNCC). Domestic network coordination committee was set up with the goal of better coordination between different agencies and ministries so that the unused infrastructure, such as laid out fiber optic cable, could be used for connectivity in the rural areas down to union level.
- An Online Library Management System is under construction. This is another quick win initiative by the National Public Library with technical assistance from A2i program.
- To enhance class room performance of secondary school teachers an initiative entitled “ICT enabled Teacher Training Program is under processing. By this program, digital contents for teacher training will be developed. A similar program has been under processing for primary school teachers.
- A2i has a plan to establish one stop service in all District Commissioners’ (DC) office of the country. The aim of this initiative is to provide service to the citizens at one visit.

Analysis and Findings:

This section analyzes the primary data obtained from the questionnaire survey with reference to United Nations’ Five Stage Model comprising of five stages namely’ *Emerging*’, *Enhanced*’, *Interactive*’, *Transactional*’ and *Connected*’.

(Presentation of Data)

Distribution of respondents by age:

Table: Distribution of Respondents by Age (n = 30)

Age Group	Frequency	Percentage (%)
20 – 30	8	26.67%
30 - 40	16	53.33%
40 – 50	4	13.33%
50 - 60	2	0.067%

From the above distribution we find that most of the respondents (53.33%) fall in the age group of 30 to 40 years.

According to the assessment of the respondents themselves about their comfort level in using computer, the response is quite mixed. Interestingly enough the maximum number of respondents (34%) rate themselves as ‘very fluent’ in using computer. The distribution is given below:-

Fluency of Respondents in Computer Use (n = 35)

Fluency in Computer Use	Frequency	Percentage (%)
Not Fluent	4	11%
Moderately Fluent	10	29%
Fluent	9	26%
Very Fluent	12	34%

Attempt to assess the computer usage frequency of the respondents is accompanied by a finding that majority (31%) of the respondents do not use computer for official purpose 'Almost Every day' whereas 26% of them use minimum once every day and 23% use computer almost every day. It is notable that 11% of the respondents never use computer for official purpose. The computer usage frequency is shown below with a pie chart below__

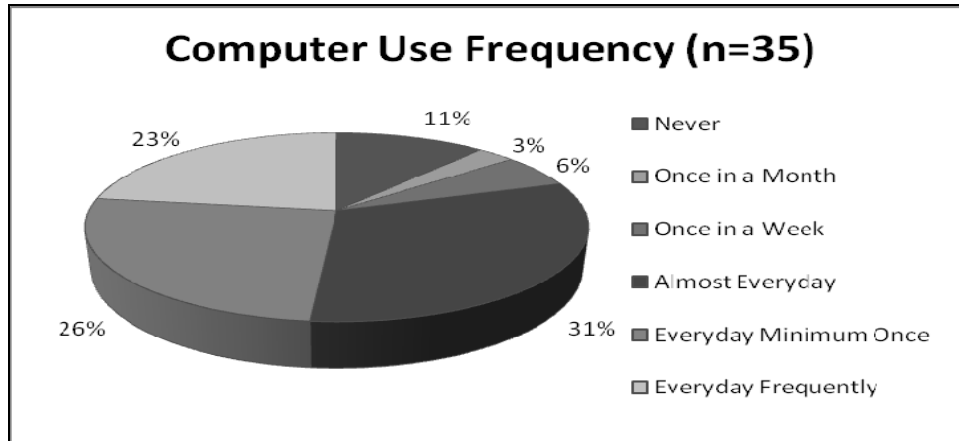


Figure: Frequency of Computer Use (n = 35)

To show a clearer picture about the daily computer usage, the primary data below the table reveals that 37% of the respondents use computer only for 30 minutes to 1 hour. The next big share (29%) indicates daily computer usage of less than 30 minutes which, of course, includes NO usage.

Table: Daily Computer Usage Pattern (n = 35)

Daily Computer Usage	Frequency	Percentage
Less than 30 Minutes	10	29%
30 Min to 1 hour	13	37%
1 hour to 2 hours	6	17%
2 hours to 4 hours	4	11%
More than 4 hours	2	6%

In case of e-mail usage, it was found that 37% of the respondents do not have personal e-mail address. More importantly 97% of the respondents especially students have e-mail address own, but rural people e-mails address rate is very low at 3% only.

Quantitative Analysis with Reference to Analytical Framework:

The quantitative analysis is done by giving equal weight to all the indicators and calculating the scores obtained on the basis of the primary data obtained. We use 5 point Likert scale to measure the table highest score get 5 point and lowest score get 1 point.

Serial no	Independent Variables	Indicators	Score Obtained
1	IT Infrastructures	Power Situation	1.15
		Internet connection	
		Computer and Accessories	
2	Awareness	Knowing vision	0.56
		ICT related Laws	
3	Technical Skill or Knowledge	Ownership of Computer for personal use	2.12
		Fluency of Computer Operation	
		Internet connection at home	
		Personal e-mail	
4	Attitudes	Rural People	0.76
		Students	
		General Citizens	

As the above analysis, we get total score 4.59 out of total score 5.

Correlation between Dependent and Independent Variable(s):

Bivariate Pearson’s correlation analysis has been performed to identify whether there is any significant correlation between the independent and dependent variables. Dependent Variables are like, (Income, Age, Education, Family background etc) and we should calculate the relationship by examining with the help of SPSS software.

Table: Relationship between Dependent and Independent Variables

Independent Variables	Correlation (r)
IT Infrastructures	0.476**
Awareness	0.230**
Technical Skill or Knowledge	0.626**
Attitudes	0.411**

More specifically, we focused our best effort to show these **findings**. Our findings are as follows:

- Based on our analysis, 53.33% of respondents are the maximum users of (ICT) facilities that age between 30 to 40 years.

- Only 34% respondents of our population are used computer very fluently.
- The computer usage frequency of majority (31%) of the respondents do not use computer for official purpose 'Almost Every day' whereas 26% of them use minimum once every day and 23% use computer almost every day. It is notable that 11% of the respondents never use computer for official purpose.
- To show a clearer picture about the daily computer usage, the primary data below the table reveals that 37% of the respondents use computer only for 30 minutes to 1 hour. The next big share (29%) indicates daily computer usage of less than 30 minutes which, of course, includes NO usage.
- It was found that 37% of the respondents do not have personal e-mail address. More importantly 97% of the respondents especially students have e-mail address own, but rural people e-mails address rate is very low at 3% only.
- The Independent variables would get total score 4.59 out of total score 5.
- The relationship exists between Independent and dependent variables which is moderately positive co-relation based on Bivariate Pearson's correlation analysis.

Conclusions:

The objective of this chapter is to draw some conclusions about the study according to the findings of data analysis with reference to the research objectives and research questions. Our research question is what is the condition of digital divide existing in Bangladesh? And what are the major factors that may enhance or impact the Digital Bangladesh? Based on our study, the condition of digital divide in Bangladesh is high. To answer this question, the primary data were analyzed in line with the analytical framework that identified four independent variables namely IT Infrastructures, public awareness, Technical Skill or Knowledge and attitudes. The IT Infrastructure should get score 1.15 and correlation 0.476 between variables that yields position is low. The study reveals that the technical skill level of the officials working at the office under consideration is reasonably moderate. On the other hand, the public awareness and attitudes regarding Digital Bangladesh is reasonably low. It was found that 37% of the respondents do not have personal e-mail address. More importantly 97% of the respondents especially students have e-mail address own, but rural people e-mails address rate is very low at 3% only.

Digital Bangladesh is the demand of the time in this era of technological excellence and even a developing country like Bangladesh is no exception to this phenomenon. In course of this study it has been observed that some sort of awareness about e-governance, ICT opportunities etc. has been present which was not there even a few years back. Whether the awareness is good enough is different issue but there is absolutely no doubt that people in general have begun to realize the importance of ICT. Even the common people who do not have much formal education, let alone technical skills, have started to recognize the importance of e-governance in ensuring good governance as well as welfare of people.

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