

E-readiness and Need Assessment

by

Bangladesh Country Gateway

Bangladesh, August 2002

TABLE OF CONTENTS

1. Background
2. Network Access and Internet Penetration
3. Networked Learning (E-learning)
4. Networked Society (E-governance)
5. Networked Economy (E-commerce)
6. Network Policy
7. Summary Findings
8. Recommendations and Conclusions

1. BACKGROUND

Rationale

The "E-readiness and Need Assessment Report- Bangladesh" is being prepared as part of planning phase objective of Bangladesh Development Gateway, which has received a grant (# ...) for the period of February- August 2002 from *infoDev*, WorldBank.

The report would like to address the current country preparedness on e-governance, e-learning, e-connectivity, e-commerce and e-policy and assess the national need to achieve a certain level of readiness for promoting sustainable development and poverty alleviation through the activities of country development gateway.

A questionnaire set has been developed in the light of the above assessment context and a survey team has been deployed to complete the survey at the stipulated period. Every step has been taken to maintain the data accuracy and continuous improvement of the questionnaire through feedback from the stakeholders and surveyed institutions. In fact, the report is a major modification of a relevant survey, which was being conducted by the SDNP survey team in 2000 and can be considered as a baseline evaluation.

Though, with enough past experience and familiarization of the survey team with most of the respondents, the time constraint has been a major constraint in conducting the survey. However, this report can be taken as another breakthrough in assessing the country's e-readiness and ICT resource assessment through an extensive survey.

Executive Summary

Internet came late in Bangladesh, but the first main frame computer reaches the country in 1968 and the first PC in 1981. Starting with a few hundred PCs in the early years, the current PC user will be exceeding 150,000 with a very reasonable assumption. However, to assess the e-readiness of the country the report has been prepared following standard guidelines. The analysis has been done in five main themes and about 20 sub-themes. They are:

- Network Access and Internet Penetration
 - Information Infrastructure
 - Internet Access and Availability
 - Internet Affordability
 - Quality Assurance Network
 - Hardware and Software situation
 - Service and Support

- Networked Learning (E-learning)
 - Access to Education Institutes
 - Extended Education using ICT
 - Development of ICT Workforce
 - Future Provisions

- Networked Society (E- governance)
 - Individuals and Organizations Online
 - Locally Relevant Content
 - Effect of ICT in Everyday Life
 - Scope of ICT in Workplace
- Networked Economy (E-commerce)
 - ICT Based Employment Opportunity
 - B2C Electronic Commerce
 - B2B Electronic Commerce
 - E-Government
- Network Policy
 - Telecommunications Regulation
 - ICT Policy

Objectives of the Assessment

Implementation of information technology is at a very rudimentary stage in regard to generalized initiatives and for the en masse applications. Hence, a study on the ICT infrastructure development and e-readiness assessment has become the national importance for this country to be able to obtain a gateway for global e-market.

Basically, the country is completely in lack of any communications backbone for high speed data transfer. Hence, primary target of an IT development initiative should relate this issue and huge collaboration of infrastructure may evolve at the end by utilizing similar facilities at the back end. Though the mobile telephone in Bangladesh has exceeded 500,000 by December 2001, but due to non-availability of normal telephone to the rural community, it would be extremely difficult and expensive to extend any computer network to the grass root level of the country.

Main target of this programme is to assess the need of infrastructure and demand at local and national level at various cross sectoral junctures and prepare a strategic plan of action for implementation.

The programme could focus on the following interrelated attributes as the main objectives:

- To ascertain the country level information infrastructure and connectivity scenario,
- To determine the potentiality of E-readiness among general community,
- To examine methods of information generation and dissemination existed in the country,
- To identify measures and means to promote human resource development through e-readiness and
- To facilitate awareness programme for promotion of E-commerce in the country.

The assessment should be able to formulate an action plan to be taken at national level for contemplating the information and communications technology towards sustainable development by raising the e-knowledge of the general communities.

Assessment Methodology

A questionnaire has been developed after studying existing guidelines from the development gateway (<http://www.developmentgateway.org>) and other resources available locally and globally. The setting pattern has been synthesized after having a brain storming session with SDNP team involved in similar activities for the last two years. The question set also been modified after taking feedback from the respondents.

The questionnaire has been divided into seven criteria;

- Computer resources available
- Internet Connectivity
- IT Related Information
- Human Resources Development
- Physical Products Services
- Needs and Demand for IT and
- E-commerce.

To prepare this report, three different approaches have been made.

- Desk study by the research team; available reports, studies, journals, etc. and relevant web sites;
- Interviews of more than 50 stakeholders/ partners within the framework of expert interviewees; and
- Expert statistical analysis.

The team took the research work at hand in mid-March, 2002 and done extensive search for contents within the available resources in BIDS library and other sources to prepare the questionnaire set and the draft report materials. Then, dividing the stakeholders in different groups, the survey team took the questionnaire set to approach them. After setting a fix time for interview they sit with the interviewee to access their overall e-readiness and need for ICT. Afterwards, depending on the time and constraint of the interviewee, the questionnaire sets have been left with the party with the urge to fill them within a stipulated period. Any difficulties for completing the responses have been solved through telephone conversation or subsequent visit(s). Finally, after accumulating all the data sets, they were put in a database for statistical analysis with the assistance of expert analyst.

At the end of the synthesis, all recommendations have been listed in the report. Organizations who did not responded to any particular questions have been contacted through telephone to improve the response, or otherwise the response from that particular organization has not been taken into inference made for the question. The study could not able to introduce any rating mechanism on e-readiness factors, as there are no formal study obtained until this period. A thorough base line survey covering nation wide institutes would be initiated, at a later date, preferably taking this survey into account. If possible rating this survey with similar parameters will assist future survey team to put critical analytical formulae.

Country Overview

Although Internet is now widely available in all major cities, its development was delayed in Bangladesh. Partly due to lack of infrastructure and lack of knowledge; partly because most of the youths, forming the mainstream e-mail and Internet users, were unable to avail the hardware resources. In way it is the high graduate unemployment, which triggered the IT revolution in the country. It was mostly this large pool of unemployed youths who sought a new career in computers and got them enrolled in what was originally seen as mushroom growth of self-styled computer training facilities that opened the path to IT in Bangladesh.

Apple Macintosh, largely due to its advantages in desktop publishing at the early period, played a pioneering role in this country. Gradually, as the professional groups moved in to offer training facilities, the better-educated students fresh from the university with the financial support of their parents took advantage of the improved environment. It is these youths who have now emerged as the core group of IT professionals.

The government has taken a few critical decisions for promotion of ICT in the country. Firstly, they have waived all taxes on all equipment related to IT; secondly, they have enacted a bill granting copyright to intellectual property; and thirdly, they have taken necessary steps to build an IT village just outside the capital city. The real contribution of the private sector has been in the area of HRD and the Bangladeshi and non-resident Bangladeshi (NRB) professionals have just begun to make their inroad into software development for the overseas clients.

For ready reference various key economic indicators available from different resources are tabulated below to reflect the country's overall situation:

Table: Key economic indicators, Bangladesh

	(Million Taka)			
	1980	1990	1999	2000
GDP (US\$ billions)	17.6	30.1	46	47.1
Gross domestic investment/GDP	19.8	17.1	22.2	23
Exports of goods and services/GDP	4.2	6.2	13.2	14
Gross domestic savings/GDP	8.2	9.7	16.7	17.8
Gross national savings/GDP	12.8	11.9	21.3	23
Current account balance/GDP	-4.8	-5.2	-0.9	0
Interest payments/GDP	0.3	0.6	0.4	0.4
Total debt/GDP	24	42.4	37.9	35.2
Total debt service/exports	23.7	28.9	9.5	8.8

Source: World Bank

Country at a Glance tables

Date: July 2001

<http://www.worldbank.org/data/countrydata/countrydata.html>

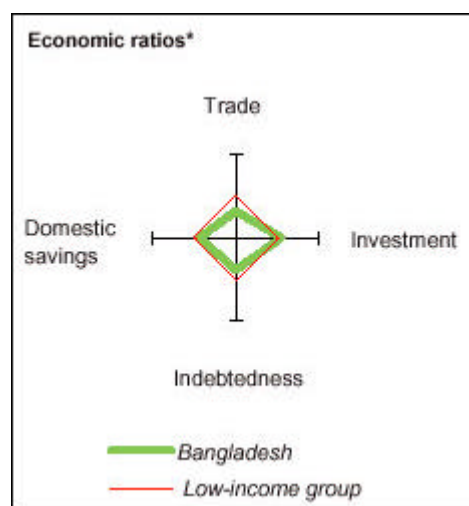


Table: National Accounts, Finance and Banking

	1994-95	1995-96	1996-97	1997-98	1998-99
Exchange rate (Taka per US Dollar)	40.2	40.84	42.7	45.46	48.06
Bank Deposit	389241	419412	471894	520045	589941
Major sectoral contribution to GDP (%) at 1995-1996 price					
Agriculture	26.02	25.68	25.87	25.34	25.28
Industry	24.29	24.87	25.01	25.72	25.7
Service	49.69	49.45	49.12	48.94	49.02

Source: BBS (Bangladesh Bureau of Statistics), CD on Basic Financial Data, 2001

Table: Average Annual Growth

(average annual growth)	1980-90	1990-2000	1999	2000	2000-2004
GDP	4.3	4.8	4.9	5.9	5%
GDP per capita	1.8	3.1	3.2	4.2	3%
Per Capita Income (in US\$)	326	343	351	359	369%
Exports of goods and services	7.7	12.8	2.3	8.6	6.4

Source: World Bank
Country at a Glance tables
July 2001

<http://www.worldbank.org/data/countrydata/countrydata.html>

Table: Other Indicators

Country	GDP Purchasing Power Parity - Millions of Dollars	Household income or consumption by percentage share - Lowest and Highest 10%	Electricity Production - millions of kWh	Unemployment Rate	GDP per Capita (USD)	Inflation rate
Bangladesh	175,500	4.1% 23.7%	11,500	35.2%	1,380	7.0%
Bhutan	1,900	na na	1,717	na	1,000	7.4%
India	1,689,000	4.1% 25.0%	404,475	na	1,720	14.0%
Maldives	500	na na	60	0.0%	1,840	6.3%
Nepal	26,200	3.2% 29.8%	1,032	na	1,100	7.8%
Pakistan	270,000	3.4% 25.2%	59,336	na	2,000	7.8%
Sri Lanka	48,100	3.8% 25.2%	5,050	11.0%	2,500	9.3%

Data source: 1999 CIA World Factbook

2. NETWORK ACCESS AND INTERNET PENETRATION

Current situation of ICT infrastructure in Bangladesh

Development of ICT infrastructure is the necessary pre-requisite for a developing country to take advantage of the newly emerged global IT revolution and in a way would contribute in the overall development of the nation.

Readiness is the degree to which a community is prepared to participate in the Networked World. It is gauged by assessing a community's relative advancement in the areas that are most critical for ICT adoption and the most important applications of ICTs. When considered together in the context of a strategic planning dialogue, an assessment based on these elements provides a robust portrayal of a community's Readiness (<http://www.readinessguide.org>).

Bangladesh, being an over populated country in this region and being at the trail among the countries with e-readiness and hence, adoption of generalized information technology at mass level of implementation is at a low end. Therefore, it is the high time to recognize the exact areas of intervention, put emphasis on specified sectors and formulate policies for better implementation of ICT in the country.

In a survey organized jointly by the Bangladesh Bureau of Statistics and Bangladesh Computer Council, done in July-September 1998 and published in April 1999, it has been found that usage of computer has been increased by 52.61% in three years since 1995. The survey also reveals that 41.31% of computers are being used for Human Resources Development, while 11.74% of them are connected to the Internet. Among the user, Data Entry Operators are the highest, 44.72%, next come the Teachers with 16.37%, then Administrators with 12.74% and the lowest rank of users are Network Experts with 2.30% usage. They have found that 78658 PCs are present at the time of survey and PCs marketed in 1997-98 are 25865 and they found that annual growth rate of PC marketing was 32.88% (Bangladesh Bureau of Statistics, 1999).

A separate survey conducted by the Sustainable Development Networking Programme (SDNP) Bangladesh through the Consultant (Needs and Resource Assessment) in April 2000 among the 26 Sub Implementing Agencies (SIAs) and few important non-SIAs, specifically focussing on utilization of computer for usage in email, network and Internet. In that survey, it has been found that 53% of the surveyed organizations have common email account for the whole organization, while 29% organizations have email accounts on department basis and 18% have personal email accounts. 9% of the surveyed organizations have indicated that ISP service has become expensive for them. In another question, related to the level of computer literacy, it has been found that most of the organizations surveyed have 1:1 or 1:2 computer and employee ratio. Only one has been found with very low computer-employee ratio, which is 1:44 (http://www.sdnbd.org/8042000_cover.htm).

In another survey done by IT Research Cell of TechBangla in December 2000 reveals that 50 ISPs are serving 60,000 Internet users and among the ISPs, 22% have bandwidth of 1-2 Mbps to the Internet. On an average, the peak time browsing cost is USD0.022 per minute.

There has not been a consolidated assessment on e-readiness made so far at national level and it would be appropriate to take an initiative for assessment of the present e-community in

Bangladesh. The study should be able to reveal the juncture of past and present e-environment through the assessment and also, be able to foresee the long term future by offering indication on formulation of strategic plan.

Internet Access and Availability

The Internet came late in Bangladesh, with UUCP e-mail beginning in 1993 and IP connectivity in 1996. By July 1997 there were an estimated 5,500 IP and UUCP accounts (Press, L., 1999) in the country and by the end of 2000 it has been forecasted that the account holder could reach more than 50,000 through different Internet Service Providers (ISP), who are offering Internet services with bandwidth ranging between 65Kbps and 2Mbps through VSAT, Broadband and Zacknet downlink.

In June 1996, the government decided to allow private entrepreneurs to act as ISPs using VSATs (Very Small Aperture Terminal). In 1999, there were about 22,000 account holders with 10 ISPs (8 in Dhaka and 2 in Chittagong) and the total number of users ranges around 100,000, while in 2000, there are about 50 ISPs providing Internet services to more than 350,000 Internet users. The growing demand of the society and the congenial global atmosphere towards Internet has made the entrepreneurs to re-think their policies and strategies to accommodate the newly emerged rapidly enlarging target group.

Initially there were only a few UUCP (UU Control Protocol) accounts in the country and then they were replaced by IP (Internet Protocol) accounts. At a later stage low bandwidth 64Kbps VSAT link became the main Internet backbone of the country with 120 million people. Demand did not inclined high compared to the huge population base, because most of them lives in rural areas where minimum tele-communication infrastructure is missing and at the same time purchasing power of the general communities limiting Internet connectivity with prevailing socio-economic conditions (a paper from CAN2001).

To offer a general picture on Internet and PC penetration in this region, a table is provided below:

Internet					Estimated PCs	
Country	Host total 2001	Hosts per 10'000 inhab 2001	User (k) 2001	User per 10'000 inhab 2001	Total (k) 2001	Per 100 inhab 2001
Bangladesh	3	n/a	150.0	11.43	250	0.19
Bhutan	1'136	16.46	2.5	36.23	4	0.58
India	82'979	0.81	7'000.0	68.16	6'000	0.58
Maldives	n/a	n/a	10.0	370.37	6	2.22
Nepal	1'513	0.64	60.0	25.43	80	0.34
Pakistan	11'319	0.78	500.0	34.49	600	0.41
Sri Lanka	2'286	1.20	150.0	78.52	150	0.79

Source: ITU, 2002.

The following table also shows some basic indicators in comparison to the total number of telephone users in the SAARC region.

Population			GDP		Total Telephone subscribers	
Country Name	Total (M) 2001	Density (per km ²) 2001	Total (B US\$) 2000	Per capita (US\$) 2000	Total (k) 2001	Per 1000 inhabitants 2001
Bangladesh	131.27	912	36.4	281	1'034.0	0.79
Bhutan	0.69	15	0.4(99)	665	14.0	2.03
India	1'027.02	324	454.5(99)	455	40'457.3	3.94
Maldives	0.27	906	0.2 (98)	763	45.7	16.92
Nepal	23.59	167	5.3	230	315.3	1.34
Pakistan	144.97	180	60.1	425	4'200.0	2.90
Sri Lanka	19.10	291	16.3	862	1'548.0	8.10

Internet Affordability

Penetration, usage and affordability of Internet in Bangladesh largely depend on the basic telecommunications infrastructure. As mentioned earlier that the country has a very low telephone density as compared to other countries in this region. To offer a picture the land phone penetration in the SAARC countries is shown in the following table:

Table: Land phone penetration within the region.

Main telephone lines				Main Telephone lines per 100 inhabitants		
Country	('000)		% inc	1995 - 01(%inc)		
	1995	2001	1995-01	1995	2001	1995 - 01(%inc)
Bangladesh	286.6	514.0	10.2	0.24	0.39	8.6
Bhutan	5.2	14.0	17.8	0.90	2.03	14.5
India	11'978.0	34'732.1	19.4	1.29	3.38	17.4
Maldives	13.9	27.2	11.9	5.67	10.09	10.1
Nepal	83.7	298.1	23.6	0.41	1.26	20.6
Pakistan	2'127.3	3'400.0	8.1	1.67	2.35	5.8
Sri Lanka	205.9	828.0	26.1	1.14	4.33	25.0

Source: ITU, 2002.

Table: Rate of telephone usage bill and other cost involve within the region.

Country	Connection fee in Taka	Connection fee in USD (1USD=54Tk.)
Bangladesh	18,200/-	337.00
Bhutan	810/-	15.00
India	1,026/-	19.00
Maldives	7,884/-	146.00
Nepal	1,566/-	29.00
Pakistan	4,806/-	89.00
Sri Lanka	9,990/-	185.00

Source: The Daily Star, 2001.

At present four private organizations are operating in offering mobile telephone facilities across the country as shown in the table below:

Table: Number of mobile phone subscriber.

<i>Name of Cell Phone Company</i>	<i>Numbers of Cell phone</i>
Grameen Phone	5,25,000
City Cell	75,000
AKTEL Telecom	1,10,000
Sheba Telecom	30,000

Source: Telephone interview and informal survey.

Apart from this service Grameen Phone is providing WAP facility through their cell phone to about 500 of its customers.

Private sector ISPs are playing a major role in popularizing and enhancing Internet backbone of the country. The following table reveals the fact.

Table: Major ISPs in the country and their capacities.

	Phone Line	Number of Leased Lines	Internet Speed in MBPS	VSAT/ internet link provider
Bangladesh Online Ltd.	650	35	4	Singtel
Bangladesh T&T Board	186		2	C&W
Grameen Cybernet Ltd.	125		5	Thai Com
Pradeshta Network Limited	50	10	4	Singtel
ProshikaNet Online Limited	450	30	3	HKT
Aftab IT Limited	11		2	Hong Kong Telecom

Source: Informal queries over telephone and web site of these companies.

The following table depicts the current ISP situation in the country. Among them more than 90% are based in Dhaka, Chittagong and Sylhet districts (most of the Internet users are from the student community).

Item of Information	Numbers
ISP (Internet Service Providers)*	70
Total Subscribers	1,50,000
Users through Cyber Café	1,85,000
Active Internet users	3,85,000

(*Out of them, one is state owned- BTTB)

Source: Informal Survey and telephone contacts.

Apart from this service, a few companies are offering Broadband (Cable Network) connectivity. Roughly 1,500 connections have been given in relatively aristocrat areas of the Dhaka city as found during the survey period.

The number of Internet subscribers is increasing at a rapid pace. At recent times, there has not been any established statistics regarding the characteristics of the users. But, it has revealed that most of the clients are from student community and youth group.

The following table shows the approximate lease fee for dedicated lines available from different ISPs for their subscribers:

Table: Leased fees for dedicated lines in Bangladesh, 2002

	Cost/month	Cost/month	Cost/month	Cost/month	Cost/month	Cost/month
	BTTB	Bangladesh Online Ltd.	Grameen Cybernet Ltd.	Pradeshta Network Limited	ProshikaNet Online Limited	Aftab IT Limited
64 Kbps	35,000	60,000	10,000	80,000	90,000	n/a
128 Kbps	50,833	100,000	22,000	180,000	80,000	n/a
256 Kbps	83,333	190,000	44,000	n/a	330,000	n/a
512 Kbps	1,33,333	370,000	88,000	n/a	n/a	n/a
1024 Kbps	2,08,333	740,000	n/a	n/a	n/a	n/a
2048 Kbps	3,33,333	1,480,000	n/a	n/a	n/a	n/a

Source: Informal Survey, web sites and telephone contacts.

BdDG Survey findings:

50 different organizations have been surveyed during this period (March 15, 2002-May 15, 2002) to access the e-readiness and e-need at the country context. Within these organizations altogether 7186 personnel are working with 2051 PCs. This figure certainly does not reflect the country's overall situation. This is because of the fact that, due to time constraint and resource limitations, main focus of the current survey was given to the organizations who have been surveyed during a baseline enumeration in 2000 (which forms about 35% of the respondents). Among the respondents, 44% are from private sector, 18% are different NGOs, 16% from government organizations and the rest 22% comprises of different associations, Educational institutes, Professional institutions and research organizations. Name and contact points of the surveyed organizations are given in Appendix-1.

Quality Assurance Network

Since most of the respondents are Dhaka based, 74% of them are connected to the Internet and 64% of them are using dial-up connection with digital telephone, while 16% are using radio modem and leased line. Many of them are using the Internet, off-line email services (UUCP) on an average of 3 to 4 years. Most of them are connected through dial-up connection and spending on an average of Tk. 1000/- (USD20) per month. This figure is not reflecting the overall situation of the country due to selection of highly networked and electronically rich organizations in the survey.

The connectivity pattern is shown in the next figure:

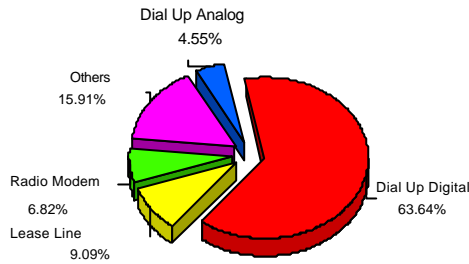


Figure: Type of Internet connection

Within the government organizations, Bangladesh Bureau of Statistics (BBS) and Bangladesh Shanbad Shangstha (BSS), Directorate of Archives and Libraries have been found well equipped with networking and they spend on an average 2 lacs Taka per month for their network maintenance. Among the private organizations, North South University and EGIS are found to be well networked within the institute. Among others, DCCI, several garments industries, textile industries and NGOs have been found potentially rich in networking, while many private organizations are still behind the reach of networking.

Most of the Internet connections are used by corporate and personal accounts as shown in figure below:

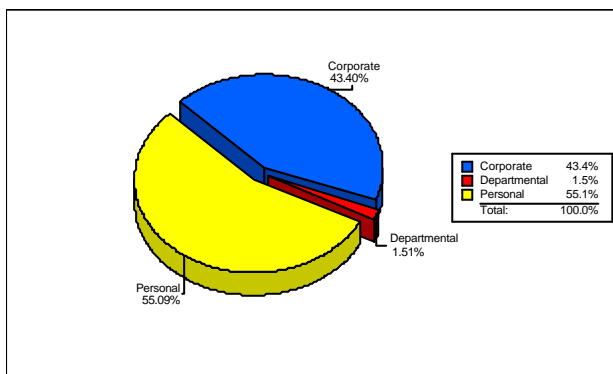


Figure: Type of Internet accounts

It has been found that almost half of them are maintaining their network with the assistance of in-house expertise and several of them are trying to expand their network further. Among the surveyed organizations BBS, BCAS, BELA, BSS, BUET, DPHE, IUCN, CAMPE and NSU have been found to be better organized in respect of networking. Their demand pattern for expansion is shown in the following figure:

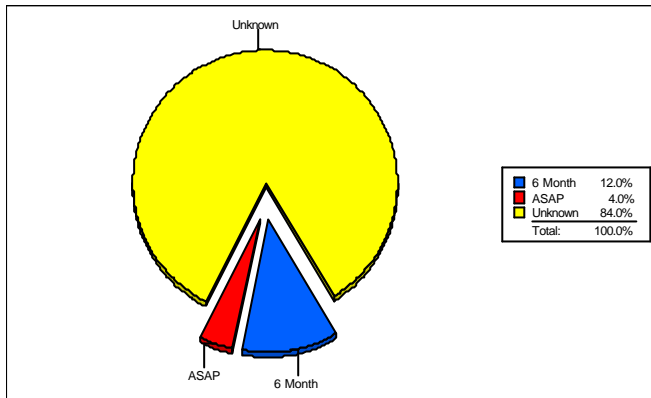


Figure: Demand pattern for expansion.

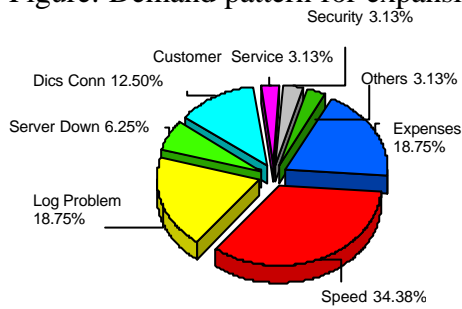


Figure: Major reasons not being satisfied with current ISP

Monthly usage pattern and reason to switch over to another ISP are shown in the next two figures:

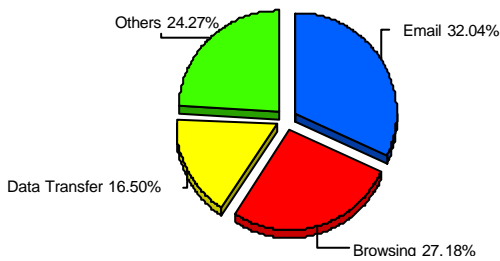


Figure: Monthly usage pattern.

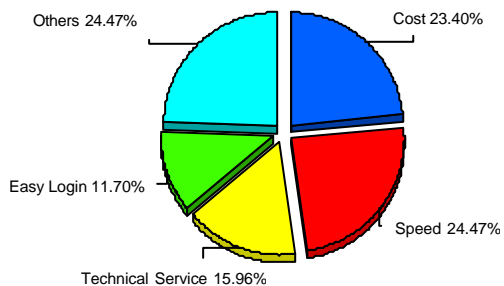


Figure: Reason to switch over to another ISP.

Hardware and Software Situation

To offer an overall picture in this respect, quotes are taken from the BCC & BBS Survey, reflecting the hardware and software market situation found in 1999:

Total number of PCs	78658
Number of PCs marketed in 1997-98	25865
Total number of mid range computers	1406
Total number of main frame computers	19
Total number of licensed software	122713

During the BDDG survey, it has been found that almost 96% of the computers are based on Intel made processors (Central Processing Unit, CPU), while the rest are made of AMD, Celeron and Cyrix. Among them 46.3% are with 128MB of RAM, while computers with 64MB comprise 37.6%. Following two figures illustrates CPU and RAM characteristics:

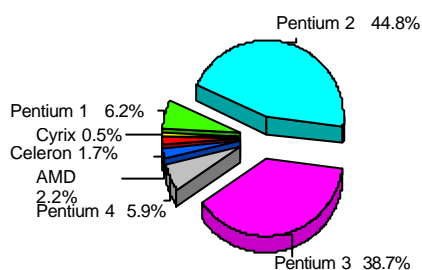


Figure: Characteristics of variation of CPUs.

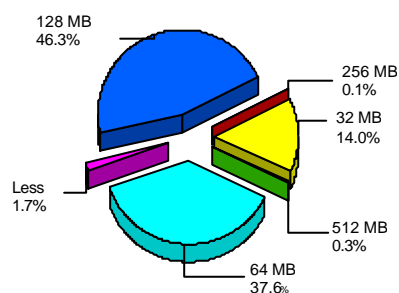


Figure: Characteristics of variation of RAMs.

Almost 50% of the surveyed PCs are fitted with CD writer. This is due to the fact that two of the organizations have almost all the PCs with CD writers. Certainly this is not the overall situation of the country. Due to the same reason, it has been found that 66% of the surveyed organizations have scanners in their premises, while 34% do not have any scanner of their own.

Service and Support

It has been found that almost half of the surveyed organizations, mostly situated in the capital city, have in house capacity for maintenance support. Several of them spend a handful amount for their network and hardware maintenance. 4% of the surveyed organizations

would like to establish their network, which do not have their own as soon as possible, while 12% answered to establish their network within six months period.

64% of the surveyed institutes maintain some forms of databases in order to cater their needs in different sectors and 72% of them have their own web sites. Target audience and purposes of their web sites is shown in the following figures:

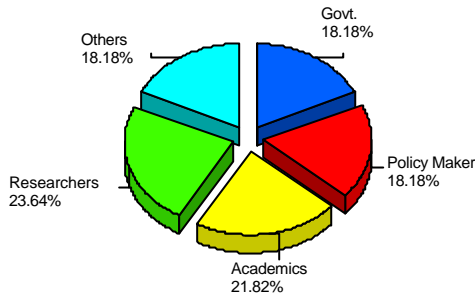


Figure: Target audience of typical web sites.

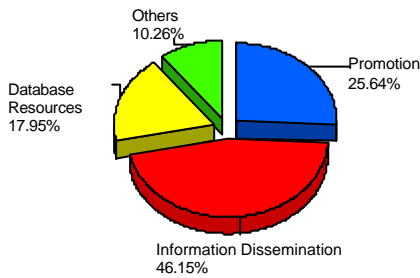


Figure: Purpose of web site development.

93% of them would like to or plan to use multimedia to disseminate and promote their products and activities with diversified forms of presentations. The presentation format is given in the next figure:

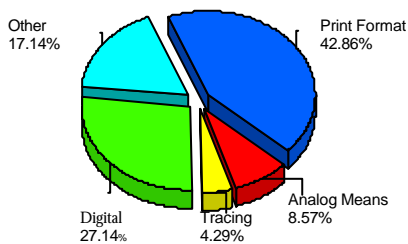


Figure: Format of presentation for information dissemination.

Those organizations, which are using multimedia presentations and producing them, almost 45% of them are doing these from their own resources. Purposes of their presentations are illustrated in the following figure:

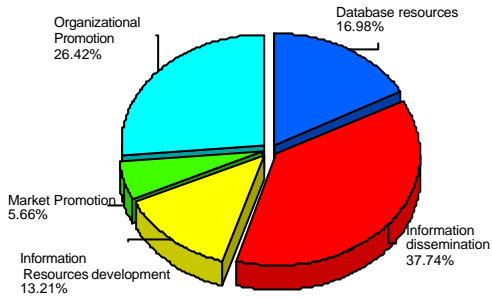


Figure: Purpose of multimedia presentation.

Almost 41% of them are using the net for promotional activities, while others are using it for information dissemination, database resources and multimedia production. The pattern is shown in figure below:

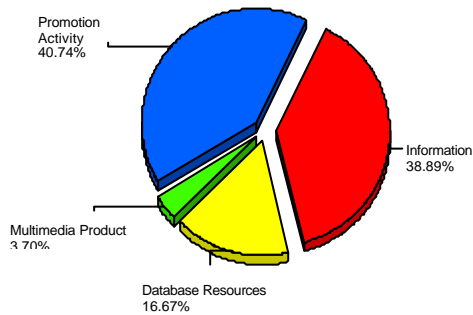


Figure: Pattern of multimedia presentation.

The following figure shown the major technical obstacles they are facing currently:

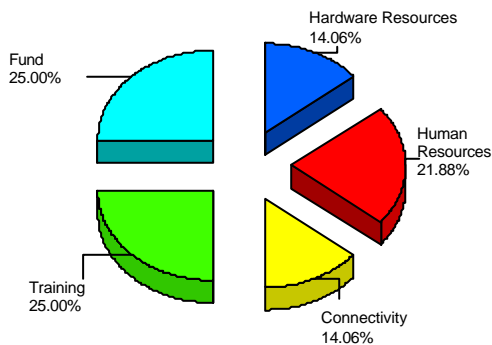


Figure: Major obstacles the organizations are facing.

3. NETWORKED LEARNING (E-LEARNING)

ICT in Education Sector

There has not been any updated survey in this sector since 1999. This survey performed by the BdDG staffs seems quite inadequate to make comments focussing the whole country or community of Bangladesh. The report tried to accommodate a few outputs obtained from this survey (among 50 respondents). However, a joint survey conducted by the Bangladesh Computer Council and the Bangladesh Bureau of Statistics in 1999 was massive and extensive. In this section quotes has also been taken from the survey conducted by the later organizations.

To portrait the basic education situation of the country, estimated illiteracy rate and illiterate population aged 15 years over is shown in the following table:

Years of census or survey	Age	Illiteracy rate (%)			Illiteracy Population (000)		
		Total	Male	Female	Total	Male	Female
1990	15+	65.2	54.0	77.0	39767	16842	22925
2000	15+	59.2	48.3	70.5	49621	20739	28881

Source: UNESCO Statistical Year Book 1999.

URL: <http://www.accu.or.jp/litdbase/stats/bgd/>

Gross enrolment ratios by level of education is given in the next table:

Gross enrolment ratios (%)					
Year	Sex	Pre-primary	Primary	Secondary	Tertiary
1985	MF	-----	62	19	5
	M	-----	72	27	8
	F	-----	52	11	2
1990	MF	-----	72	19	4
	M	-----	77	25	7
	F	-----	66	13	1

Source: UNESCO Statistical Year Book 1999.

Percentage of GNP and government expenditure is shown in table- giving the total and current public expenditure on education:

Year	Total Expenditure on Education		Current Expenditure on Education		
	As % of GNP	As % of total government expenditure	As % of GNP	As % of current government expenditure	As % of total expenditure of education
1990	1.5	10.3	1.2	14.4	79.1
1996	2.2	-----	1.3	-----	58.5

Source: UNESCO Statistical Year Book 1999.

The survey conducted by BCC and BBS were conducted among 1836 IT organizations who are involved in IT related activities. About 18,717 IT professionals and users were interviewed. According to job description, human resources for IT is shown below:

Data Entry Operator	8372 (44.72%)
Teacher	3065 (16.37%)
Administrator	2386 (12.74%)

Programmer	1221 (06.52%)
Hardware Engineer	0979 (05.23%)
Database Expert	0870 (04.64%)
DTP Operator	0782 (04.17%)
Systems Analyst	0485 (02.59%)
Network Expert	0432 (02.30%)
Others	0127 (00.67%)

Enhancing Education with ICT

Any recent data is not available at this moment on computerization of schools in Bangladesh. A detailed need survey can be performed at a later stage to understand the training needs in ICT, access the digital divide in rural student community, need of improvement in syllabuses, need for trainers and teachers at grass root level.

Developing the ICT Workforce

The telecommunications sector in Bangladesh has been characterized by a very low level of penetration, limited capability to meet the growing demand, low level of investment and old outdated systems and technologies necessitating reactive remedial measures. The country has fewer than three telephone lines for every 1000 people (UN Human Development Report 1999).

In order to develop a national sound telecommunication infrastructure to support the economy and welfare of the country by providing telecommunication facilities on demand, assuring satisfactory quality of service and ensuring value to the customers, a sound National Telecommunication Policy is essential. The strategic vision of the government is to facilitate Universal Telephone Service throughout the country and where there is a demand, all those value added services such as cellular mobile telephone paging, data service, access to Internet, voice mail and video conferencing- all at an affordable cost without compromising performance (National Telecommunication Policy, 1998).

In recent years Bangladesh government has taken liberal IT policies to enhance the mass awareness on information technology. Complete withdrawal of tax on computer and computer related items has created extra enthusiasm among general society through increased participation in computer based activities including training and software development.

Future Provisions

The National Telecommunication Act, 2000 has been sent to the cabinet secretariat and a separate autonomous regulatory commission, the Bangladesh Telecommunication Regulatory Commission (BTRC) has been formed, for adapting the fast changing technologies in the telecommunications sector and supervise the services to ensure that the interest of the users is protected.

The government is at a final stage of forming the National Telecom Regulatory Commission (NTRC) to make the decision making process more democratic and effective in connection with telephone management (The Daily Star, 2000) and a 15 members high powered IT Task Force has been formed with the Prime Minister as the Chairperson.

With a view to reducing pressure on its fixed lines and facilitating operations for the Internet Service Providers (ISPs), the BTTB is likely to introduce the European Standard-1 (E1) system within a short period. Presently ISPs have to pay USD1000 per year for 30 leased lines in addition to the one-time demand note charge of USD10000. The E1 connection would cost around USD1400 per year for the same package, which will save the cost by about 85% and also, the E1 line will be able to ensure better bandwidth at 56Kbps instead of the existing 9.6-16.8 Kbps line by increasing the efficiency by more than 400%.

4. NETWORKED SOCIETY (E-GOVERNANCE)

People and organization Online

At present there are 670,000 fixed telephones and more than 600,000 cellular mobile telephones in the country. The telephone density of the country is about 0.51% and expected to rise to 0.8% by the end of 2001 (Country Paper, BTTB, October 2001).

In a survey done by the Bangladesh Computer Council and Bangladesh Bureau of Statistics has found that 41% of computers are being used for human resource development purpose. Users comprising of government sectors, offices, banks and NGOs contribute 26% and the main income generating trend of the developing nations towards IT intervention only contributing 6% of usage (Source: BCC and BSS, 1999).

The number of lead ISPs and their subscriber scenario is given in the following table.

	Number of Subscriber	Per Minute Rate in TK
Bangladesh Online Ltd.	5000	0.80-1.50
Bangladesh T&T Board	6000	0.50 to 0.30
Grameen Cybernet Ltd.	9000	1.20-1.90
Pradeshta Network Limited	500	0.40-1.00
ProshikaNet Online Limited	10000	0.80
Aftab IT Limited	3000	0.50 - 0.75

Source: Informal queries over telephone and web site of these companies.

Locally Relevant Content

Number of Internet hosts in Bangladesh is found to be 3 in 2001 with nearly 150,000 subscribers, which gives a number of 11.43 per 10,000 inhabitants (ITU, 2002). However, locally created web sites have been progressed rapidly. A list of Bangladeshi developed web sites is given in Annex-2 (available from <http://www.bol-online.com/bdweb.html>).

A society has been formed with leading private entrepreneurs engaged in promoting computer products in Bangladesh and it is providing assistance in designing and implementing policy issues and related affairs at the rudimentary stage of the country. Members' list of the Bangladesh Computer Samity is available at the following URL: <http://www.bcs-bd.org/memlistad.html>.

A list of available companies engaged in IT business in Bangladesh is available at <http://www.sdnbd.org/sdi/issues/IT-computer/isp-bd.htm>.

IT Company Portal is sponsored by TechBangla & Co-sponsored by JOBS IRIS, a USAID project with the following URL: <http://www.bangladeshit.com/>

Some Responses from the Survey

From the BdDG survey it reveals that 60% of them have organizational data of their own in diversified form. Type and format of the data sets are shown in the following figures:

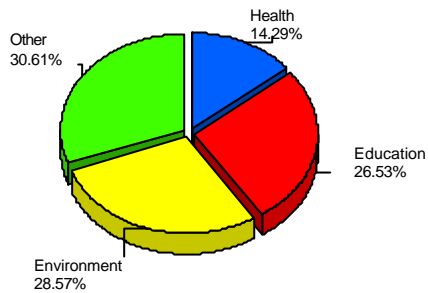


Figure: Format of organizational data sets.

42% of the surveyed organizations preferred to share data and only 3 of them responded to share their data fully, while 18 responded to share partially and 29 remain abstained. 7 (14%) among them would like to sell their data, 14 (28%) would prefer to offer their at free of cost and the rest did not responded to this question.

Regarding a question, whether they would prefer any external organization to perform the database support, 36% responded affirmative, 18% negative and rest abstained. Characteristics of their demand is shown in the next figure:

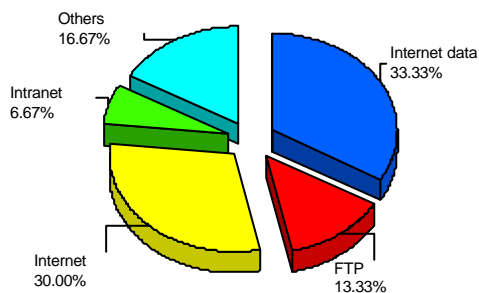


Figure: Characteristics of organizational demand.

Effect of ICT in Everyday Life

ICT has become part and parcel of every day's life and the indicators needed to measure this effect needs more in-depth enumeration and analysis. The team is following the recent activities and issues related to policy decisions and implementations in the country related to ICT initiations. Reflection will be made in the final submission as per the availability of information and content.

Scope of ICT in Workplace

It has been found in this phase of the survey that most of the organizations are equipped with sophisticated network and accessories, and also supported by skilled manpower. These figures do not reflect the overall situation of the country. To access overall ICT environment, a thorough enumeration with a duration of more than six months period and more than a group of ten enumerator need to be engaged in near future. This sort of survey has not been carried out so far and has become prime importance to reveal issues in ICT development of the country.

5. NETWORKED ECONOMY (E-COMMERCE)

ICT Based Employment Opportunity

The evolution of the digital economy and the explosion of e-commerce have created new challenges for entrepreneurs who provide databased solutions to today's businesses. The emergence of the WWW as a dominant force in business has contributed to a dramatic increase in the amount of data available to organization.

These trends have heightened reliance on traditional database applications and increased the demands on these applications in terms of both performance and reliability. In addition, the changes in the way of doing business have created demand for new features that extend database applications beyond the traditional feature set and prepare them to do service in the new economy.

In contrast to the global situation, the Bangladesh Government has also been found promoting the use of electronic transactions and is committed to creating an environment in which these transactions will be completely secure. Though this process is at a very rudimentary stage, but a few of the renowned organizations are working to prepare a policy guideline for the country.

In this respect, a certification authority for issuance and management of digital certificates that are needed to secure electronic transactions is being formed. Use of international credit cards like VISA, MasterCard etc. is increasing rapidly and is being encouraged. Along with these measures, necessary legal framework, so that the guiding principles, rules and legislation for e-commerce are in place, is in the process of formation.

Background analysis and further information will be provided regarding ICT based HRD and employment opportunity in the final submission.

B2B and B2C Electronic Commerce

Bangladesh Development Gateway can develop an **Online Databank Development Group** capable of developing and maintaining an online database with E-commerce facilities. In this regard, a few questions were included in the questionnaire set. 18% of the respondents responded to sell their products, 36% would like to offer their products at free of cost and the rest remained abstained. Characteristics of their product format is given in the next figure:

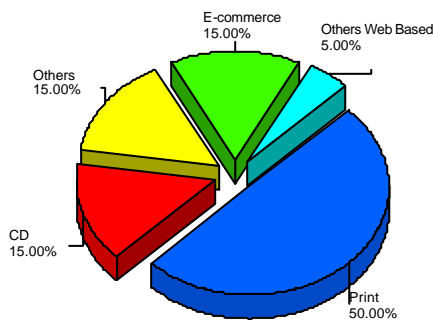


Figure: Characteristics of organizational products.

In another question, to access their capability in e-commerce preparation 30% responded that they have their in house support, only 2% indicated that they do not have any sort of in house capacity, while the rest did not responded to the question. It is speculated that the non-response may be due to lack of awareness or may be they would not like to reveal their product information. In the final phase of the report, further in-depth study will be conducted to update this issue.

The pattern of available e-commerce resources is shown in figure below:

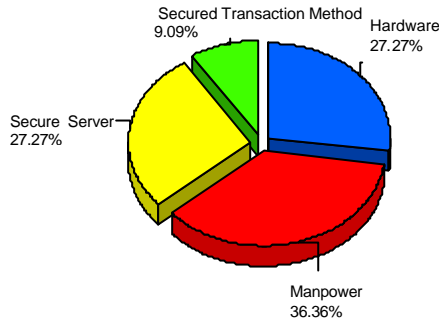


Figure: Pattern of e-commerce resources.

In a unique collaboration between the garments and IT sectors, BGMEA, DataSoft, Bangladesh and eVastra, USA have created www.bangladeshgarments.info - the country's first Business-to-Business (B2B) web portal. It functions as a virtual global marketplace where the country's factories are united, thus presenting a significant presence to draw buyers from around the world. With this user-friendly and fully functional site, Bangladesh's garment exporters have been put on the e-Commerce fast-track. The www.bangladeshgarments.info site has been created for the BGMEA members with all the features required by Bangladesh's garments exporters in mind. (www.bangladeshgarments.info).

E-Government

Bangladesh Government has taken several initiatives in this respect. USAID, UNDP and a few other agencies are conducting case studies. Data and information will be accommodated in the updated reports as per the availability.

6. NETWORK POLICY

Telecommunication Regulations

In Bangladesh, the IT has been declared as the most thrust sector and the Government and the private sector have committed themselves to collaborate actively “with a view to improve the quality of life of its people and acquire the necessary capability to meet the challenge of rapidly growing demands of the information age”.

It is believed that the IT will create opportunities for all citizens, including the disadvantaged and those living in remote areas. The government is committed to setting up appropriate IT organizational and institutional structures, taking measures to strengthen HRD and educate leaders, both in the public and private sectors, on the appropriate use and benefits of IT in nation building.

The government sees itself responsible for creating a “regulatory environment that facilitates the rapid growth of all networks, promoting interoperability, data security and protection of intellectual property rights”.

The government has already approved The National Telecommunication Policy, 1998, and the Bangladesh Telecommunication Act, 2001 has been assented by the President on April 16, 2001 and published by the Bangladesh Parliament in the Bangladesh Gazette, Extraordinary issue of April 16, 2001 (Act No. 18 of 2001).

The country expects rapid growth rate in IT spending, preferably with the state support, to reach a target of at least 25% growth per annum. Major investments, preferably in collaboration with foreign firms, are being encouraged towards creating “a world-class industry and IT professional services sector”.

It has been suggested that the high-speed fiber optics communication channel of Bangladesh Railway could be used for setting up of a national data communication network for nationwide transmission of data.

Plans for setting up IT village, software technology parks (STPs) with satellite data communication facilities especially for software development/export companies, and introduce need-based R&D activities in universities, BITs, Colleges, Polytechnics by the Ministry of Information Technology have encouraged expatriate Bangladeshi's to undertake substantive investments.

A national software development plan (NSDP) to develop domestic software market is already underway. An export target of 1 (one) billion US dollar has been set for the next 3-year period. The target shall be revised periodically to match the growth of the market.

In addition, a Development of National Data Resource Centre Network (NDRCN), a network of MIS of different ministries, localities and sectors including education, health, agriculture, industry and natural resources, environment and ecology is underway.

ICT Policy

As mentioned earlier, the government has already passed the National Telecommunications Act 2001, in the process of preparing the National ICT Policy and working to establish legal ICT issues through different policy initiating committees.

Necessary legislation has already been enacted granting intellectual property rights, legislation are being considered in the form of appropriate penal codes in order to protect computer crimes such as software piracy, unauthorized use/copying of software, computer fraud, hacking and damage to programs and data and introducing/spreading computer viruses.

The National Council for Information Technology (NCIT) as the central coordinating agency has been formed. The body advises the Government on critical IT issues of importance. The Bangladesh Computer Council (BCC), another government controlled institute is also acting in this respect.

Thus, the advent of information technology is still at an early but growing stage. Particularly, many of the necessary institutional, legal and physical infrastructures necessary for its further development are being laid down. What is lacking is a general trust for making IT a preferred medium for people exchange of information and interaction and in the process makes other related endeavors economically and socially beneficial to the country. The role of BDG in collaboration with others would contribute towards such a trust.

List of available web sites containing ICT policy, initiatives and contents:

- State of the Internet 2000
<http://www.sdnbd.org/sdi/issues/IT-computer/State%20of%20the%20Internet%202000.htm>
 - Information Technology Policy - (Draft) BCC
<http://www.sdnbd.org/sdi/issues/IT-computer/itpolicy-bd.htm>
 - Information Technology Policy 2001-2005 - (Draft) BASIS
<http://www.sdnbd.org/sdi/issues/IT-computer/Information%20Technology%20Policy.htm>
 - National Science & Technology Policy
<http://www.sdnbd.org/sdi/issues/IT-computer/sci-tec-polict.htm>
 - Recommendations provided to the GOB on IT that is based on SBIT conference and various meetings with GOB officials (PDF format)
<http://www.sdnbd.org/sdi/issues/IT-computer/AABEA-recommendation-to-GOB.pdf>
- (Source: <http://www.sdnbd.org/sdi/issues/IT-computer/link.htm>)

7. SUMMARY FINDINGS

This survey is insufficient to make comment on a national perspective. Random selection of about 50 corporate Internet users and organizations can only offer us an instant picture of the e-connected community of the capital city. To achieve some more aggressive indicators, enumeration at root level including organizations operating at district level of Bangladesh would have to be included. However, after a baseline survey in 2000, this subsequent survey gave this report to make comment on certain aspects:

- Infrastructure support is quite low as compared to other countries in this region;
- Man-machine ratio need to be upgraded;
- Intranet facilities are inadequate;
- Budget provision is inadequate for establishment, maintenance and expansion of computer network;
- Internet facilities have to reach sub-urban and district level;
- Resources are being restricted to a fewer organizations, rather than distributing to increasing number of organizations;
- Operation and maintenance costs of Internet is restricting low end institutes and organizations to avail these services;
- Lack of any centralized policy was hindering the progress of ICT in the country;
- Emphasis should be given to awareness development and HRD;
- Enough ground work is needed to promote e-commerce; and
- Further in-depth study is needed to carry out for extensive enumeration.

8. RECOMMENDATIONS AND CONCLUSIONS

The information infrastructure, comprising all information related institutional bodies, networks, databases, broadband communication and broadcasting systems, is the backbone of the modern information age. Without adequate information infrastructure a country will be unable to reap the rewards of the information age and will be excluded from the global information superhighway and the cyberspace.

ICT is a fast growing technology and many developed countries already reached to a commendable position in this aspect. Even, recently a large number of developing nations made unprecedented progress. To follow the technological trend and the level of expertise of these countries and attain a sustainable growth in this sector and to compete in the expanding global IT market, a separate IT ministry was the demand of the time. Fortunately it has been formed and all out effort from this newly established ministry is extremely essential for ICT related policy initiations in Bangladesh.

The whole country should be brought under telecommunications network at the earliest possible time and all existing analogue channels should be readily converted to digital, covering the whole country under PSTN. The BTTB can create facilities for low-cost high-speed communication link and set up ISDN/HDSN lines throughout the country. Especially it is required to introduce high bandwidth T1 and E1 lines and high speed data transmission channels. Telecomm facilities should be specially focused to rural and remote regions following the usage pattern, but not compromising the quality of service and justification of cost. The time has come to privatize the Telecomm sector.

Emphasis should be given to extend information infrastructure, awareness development, human resource development, and distribution of resources. Policy guideline should be prepared for promotion of e-commerce and e-governance.

Annex-1**List of Interviewed Organization with Person Information available on May 15, 2002.**

Name of Organization	Persons Interviewed	Designation
<i>Government Organizations (GOs)</i>		
1. Abhawa Bhaban	Md. Enaitur Rahman Miah	Asst. Metereologist, Climate Division
2. Bangladesh Bureau Statistics (BBS)	Abdur Rashid Majumder	Director
3. Dept. of Public Health Engineering (DPHE)	Khaleda Ahsan	System Manager
4. Directorate of Archives & Libraries	Tahmina Akter	Programming Officer
5. Environmental & GIS Support Project for Water Sector Planning (EGIS)	Shahed Kamal	Manager, System 7 Network
6. Export Promotion Bureau (EPB)	Md. Jamal Uddin Majumder	Computer Programmer
7. Local Govt. Engineering Dept. (LGED)	Munir Siddique	Asst. Engineer
<i>Professional Bodies</i>		
1. Bangladesh Garments Manufacturers & Exporters Association (BGMEA)	Md. Sorru Samad	System Manager
2. Dhaka Chamber of Commerce & Industry (DCCI)	Ferdous Ara Begum	Joint Sec. (R&P)
3. Federation of Bangladesh Chambers of Commerce & Industry (FBCCI)	Md. Shamimur Rahman	Jr. Officer(C.S.)
4. Institution of Engineers Bangladesh (IEB)	Mr. Sirajul Islam	Training Manager
5. National Press Club	Mushtaqur Rahman	Librarian
<i>Education Institutes</i>		
1. Abu Jhar Ghifari University College	Mr. Amanullah	Asst. Professor
2. Bangladesh Technical Education Board (BTEB)	Md. Jakir Hossain	Asst. Programmer
3. Dept. of Computer Science, Dhaka University	Md. Haniful Hasan Siddique	Lab. Tech. Officer
4. Institute of Information & Communication Technology, (BUET)	Prof. Dr. S. M. Lutful Kabir	Director
5. Institute of Scientific Instrumentation (ISI), University Grants Commission (UGC)	Md. Sultan Mahmud	Administration Officer
6. North South University	Animesh Kumar Sarker	Senior Hardware Engineer
7. Siddheswari University College	Shaik Julhash Uddin	Lecturer in Computer Science
<i>Non Government Organizations (NGOs)</i>		
1. Bangladesh Centre for Advanced Studies (BCAS)	Mazharul Alam	Research Fellow
2. Bangladesh Environmental Lawyers Association (BELA)	Mr. Nazimuddin Prodhan	In charge, Computer section
3. Bangladesh Unnayan Parishad (BUP)	Gyotimoy Devnath	P.S. to Chairman
4. Campaign for Popular Education (CAMPE)	Md. Enamul Haque Khan	Deputy Program Manager
5. CARITAS Bangladesh	Mr. Shfiul Azam	Information Officer
6. Forum of Environmental Journalists of Bangladesh (FEJB)	Shah Jamal Siddique	Computer Programmer
7. Gonochetona	Nurul Alam Dewar	Administrative Asst.
8. Unnayan Shammonay (US)	Ms. Chowdhury Shirin Sultana	Computer Operator
9. PRISM Bangladesh	Kh. Anisur Rahman	Executive Director
10. The World Conservation Union (IUCN)	Kazi Abdul Mannan	Publication Asst.

<i>Media</i>		
1. Bangladesh Sangbad Sangstha (BSS)	Kaiser Ahmed	System Engineer
2. The Daily Prime	Md. Mizanur Rahman	Editor
3. Ekushey Television Ltd. (ETV)	Ahsan Habib	IT Executive
<i>Private Organizations</i>		
1. Anlima Group of Companies	Ahsan Kabir Chowdhury	Executive MIS
2. The Dhanshiri Ltd. & Dhanshiri Shomobay Shamiti Ltd.	Abdul Latif Reza	Project Supervisor
3. D Graph Computer	Shafiul Alam	Graphic Incharge
4. E N Traders	Masum Ahmed	Owner
5. Hatil Complex Ltd.	Moshiur Rahman	Director
6. Holyland Fashion	Shahbuddin Ahmed	Managing Director
7. Jishan Textile	Zahirul Islam	Commercial Manager
8. Marshia Gift Centre	Jewel Ahmed	Owner
9. ME Computers	Ezaj	Executive
10. Packers Group	Salam Chowdhury	Chairman
11. Protikriti Communications	Mashuqur Rahman	Graphic Executive
12. Royal Traders	Saiful Bari	Owner
13. Siddiiquei Fashions Marks	Md. Abu Ayub	System Engineer
14. South East Travels	Topan Das	Manager, Sales
15. Space Air Cargo Ltd.	Aftab Uddin Ahmed	Marketing Executive
<i>International, Research, Financial Organizations</i>		
The World Bank	Md. Fajjul Islam	Information Analyst
Bangladesh Institute of Development Studies (BIDS)	M.A. Hakim	EDP Manager
FEDEX (Mirpur branch)	Anwarul Azim Chowdhury	Executive
Prime Insurance Co. Ltd. (Mirpur branch)	Arifur Rahman	Officer, Underwriting

Annex-2: List of Bangladeshi Web sites

Bangladesh Govt's Sites:

Bangladesh Government- <http://www.bangladeshgov.org/>
Prime Minister's Office - <http://www.bangladeshgov.org/pmo/index.htm>
Bangladesh Parliament- <http://www.parliamentofbangladesh.org/>
Election Commission Secretariat - <http://www.bd-ec.org/>
National Board of Revenue- <http://www.nbr-bd.org/>
Ministry of Science and Information & Communication Technology - <http://www.most-bd.org/>

Educational Institutes:

Dhaka University - <http://www.univdhaka.edu/>
Bangladesh University of Engineering and Technology - <http://www.buet.edu/>
Chittagong University - <http://www.ctgu.edu/>
Rajshahi University - http://www.ugc.org/rajsahai_uni.htm
Khulna University - <http://www.khulna-university.org>
National University - http://www.ugc.org/national_uni.htm
Islamic University - http://www.ugc.org/islamic_uni.htm
Jahangirnagar University- <http://www.juniv.edu>
Bangladesh Open University - <http://www.citechco.net/bou/>
Bangladesh Agricultural University - <http://agri-varsity.tripod.com/>
Independent University, Bangladesh (IUB) - <http://www.iub-bd.edu>
IUBAT — International University of Business Agriculture and Technology - <http://www.iubat.edu>
AMA International University of Bangladesh - <http://www.aiub.edu/>
North South University - <http://www.northsouth.edu>
Udayan School, Dhaka - <http://www.udayan.com/>

Bangladeshi News Papers:

In Bangla

The Daily Ittefaq - <http://www.ittefaq.com/>
The Daily Muktakantha - <http://www.muktakantha.com/>
The Daily Janakantha - <http://www.janakantha.net/>
Weekly Jai Jai Din - <http://www.jajaidin.com/>
Prothom Alo - <http://www.prothom-alo.com/>
Unmad - <http://www.unmad.com/>

In English

The Daily Star - <http://www.dailystarnews.com/>
The Daily New Nation - <http://www.nation-online.com/>
Independent - <http://www.independent-bangladesh.com/>
The Financial Express - <http://www.financial-express.com/>
The Weekly Holiday - <http://www.bangla.net/holiday>
Dhaka Courier - <http://www.dhakacourier.com/>
Dhaka-Bangladesh Web's News - <http://www.dhaka-bangladesh.com/>

Country Guides

Virtual Bangladesh - <http://www.virtualbangladesh.com/>
Cyber Bangladesh - <http://www.cyberbangladesh.org/>
Bangladesh.Net - <http://www.bangladesh.net/>
Sapner Bangladesh - <http://www.bangladesh.cc/>
Amar Bangladesh - <http://www.chetona.com/>
Bangla 2000 - <http://www.bangla2000.com/>
Bangladesh.net - <http://www.bangladesh.net/>
Dhaka-bd.com - <http://www.dhaka-bd.com/>
Bangladesh Search Engine - <http://www.bangladeshsearch.com/>
Bangladesh.cc - <http://bangladesh.cc/links/>
Munshigi.com - <http://www.munshigi.com/>

Liberation War:

Bangladesh National Museum - <http://www.bangladeshmuseum.org/>
Liberation War Museum - MuktiJuddho Jadughor - <http://www.liberationmuseum.org/>

Associations/Institutes/Societies:

Bangladesh National Museum - <http://www.bangladeshmuseum.org/>
Bangla Academy - <http://www.coronait.com/Bangla-Academy/>
Bangladesh Institute of Law and International Affairs - <http://www.bol-online.net/bilia/>
Bangladesh Association of International Recruiting Agencies - <http://www.hrexport-baira.org/>
Bangladesh Association at Houston - <http://www.bangladesh-association.com/>
Internet Society Bangladesh Chapter - <http://www.isocbd.org>

Non-Government Organization (NGOs):

BRAC - <http://www.brac.net/>
Grameen Bank - <http://www.grameen.org/>
Proshika - <http://www.proshika.org>
Bangladesh Centre for Advanced Studies - www.bcas.net

Hotels:

Hotel Sheraton - www.sheraton.com
Hotel Lake Castle Limited - <http://www.hotellakecastle.com/>
Pan Pacific Sonargaon Hotel - www.panpac.com/bangladesh/dhaka/hotels/hotel.html
Grand Azad Hotel – www.grandazadhotel.com

TV Channels:

ATN Bangla - <http://www.atnbangla.com>
Channel i - <http://www.channel-i-tv.com/>

Internet Service Providers (ISPs):

Bangladesh Online Ltd. - <http://www.bol-online.com>
BDCOM - <http://www.bdcom.com/>
Proshika Computer Systems - <http://www.bangladeshonline.com/>
Agni Systems Ltd. - <http://www.agni.net/>
Grameen Cybernet - <http://www.citechco.net/>
Information Services Network Ltd. - <http://www.bangla.net/>
Westec Limited - <http://www.bdlink.com/>

Yellow Pages:

Bangladesh Business Guide Yellow Pages – <http://www.bgyellowpages.com/>
Bangladesh Yellow Pages - <http://www.bangladeshyellowpages.com/>
Bangladesh Online Yellow Page - <http://www.yellow-bd.com/>

Business Guides:

Export Promotion Bureau - <http://epbbd.com/>
Bangladesh Securities and Exchange Commission <http://www.secdbd.org/>
Bhuiyan Consulting - <http://www.bhuiyan.com/>
Bangladesh Export Processing Zones Authority - www.bangladesh-epz.com/
Apex Polymer Group - <http://www.apexpolymer.com/>
Apex Weaving & Finishing Mills Ltd. - <http://www.apexweaving.com/>
Bangas-Tallu Group - <http://www.bangladesh-business.com/>
Bangladesh Broadcasting Telephone Technology - <http://www.bbtt-phs.com/>
Beximco Group - <http://www.beximco.org/>
Beximco Infusions - <http://www.beximco-infusions.com/>
Beximco Pharmaceuticals Ltd. - <http://www.beximco-pharma.com/>
Beximco Textile Division - <http://www.beximco.org/textiles/>
Bd Export.com - <http://www.bdexport.com>
Delta Brac Housing Finance Corporation Ltd. (DBH) - <http://www.bol-online.net/dbh/>
Dhaka Stock Exchange, Bangladesh - <http://www.dsebd.org/>
Famano Textile Mills - <http://www.bol-online.net/famano/>

GMG Airlines - <http://www.gmggroup.com/>
International Office Machines Ltd. - <http://www.iomltd.com/>
JV Duratex Group - <http://www.bol-online.net/jaantex/>
Millenium Garments Limited - <http://www.millennia-bd.com/>
Nitexpo International - <http://www.nitexpo.com/>
Orient Cargo Line - <http://www.ocl-bd.com/>
Prisma Digital - <http://www.prisma-digital.com/>
Rahan Garments (Pvt.) Ltd. - <http://www.bol-online.net/rahan/>
Rangs Properties Ltd. - <http://www.rangs.com/>
Sea Nebula Corporation Ltd. - <http://www.bangladeshshipping.com/>
Trade Clippers Cargo Ltd. - <http://www.tradeclippers.com/>

Photo Gallery:

The Drik Art Gallery - <http://www.drik.net>
Discovering the Children of Bangladesh - wsrv.clas.virginia.edu/~bhs2u/kabir/kabir.html

Misc:

The Hilsa shad Pages - <http://www.pathcom.com/~mizan/>
GMG Air Lines - <http://www.gmggroup.com/>
The Law Associates - <http://www.tlabd.com>

Internet Service Providers in Bangladesh

AB Network Limited
Access Telecom Limited
Aftab IT Limited
Agni Systems Limited
Asia Online (BD) Ltd.
Bangladesh Online Ltd.
Bangladesh T&T Board
BD com Ltd.
Bd Corp
Bdcom Online Limited
Bijoy Online.net
BG Tech
Brac Network System
Dolphi Net
Drik Online Limited
E-Net Communications Ltd.
Global Information Services Ltd.
Grameen Cybernet Ltd.
Information Services Network Ltd.
KLBd Online
NCLL
Pradeshta Network Limited
ProshikaNet Online Limited
Raspit.com
Shapla.net
Span Internetworks Ltd
Spark Systems Ltd.
Spectra Solution Limited
SpectraNet Limited
Trans-net System Ltd.
Vas Digital Communications Ltd.
Westec Limited

Online Newspapers from Bangladesh

Bangladeshi News Papers:

In Bangla

The Daily Ittefaq - <http://www.ittefaq.com/>

The Daily Muktakantha - <http://www.muktakantha.com/>

The Daily Janakantha - <http://www.janakantha.net/>

Weekly Jai Jai Din - <http://www.jaijaidin.com/>

Prothom Alo - <http://www.prothom-alo.com/>

Unmad - <http://www.unmad.com/>

In English

The Daily Star - <http://www.dailystarnews.com/>

The Daily New Nation - <http://www.nation-online.com/>

Independent - <http://www.independent-bangladesh.com/>

The Financial Express - <http://www.financial-express.com/>

The Weekly Holiday - <http://www.bangla.net/holiday>

Dhaka Courier - <http://www.dhakacourier.com/>

Dhaka-Bangladesh Web's News - <http://www.dhaka-bangladesh.com/>

ABBREVIATIONS

ADAB – Association of Development Agencies in Bangladesh

BARC – Bangladesh Agriculture Research Council

BBS – Bangladesh Bureau of Statistics

BELA – Bangladesh Environmental Lawyers Association

BIDS – Bangladesh Institute of Development Studies

BOU – Bangladesh Open University

BUET- Bangladesh University of Engineering and Technology

BUP – Bangladesh Unnayan Porishad

DCCI– Dhaka Chamber of Commerce & Industries

DLRS – Department of Land Records & Survey

DOE– Department of Environment

DPHE – Department of Public Health & Engineering

EGIS – Environment & Geographical Information System

FEJB – Forum of Environmental Journalists of Bangladesh

FTP – File Transfer Protocol

IEB – Institute of Engineers in Bangladesh

IUCN – International Union for Conservation

LAN – Local Area Network

LGED – Local Government Engineering Department

PMU – Project Monitoring Unit of SEMP, MoEF

SDNP – Sustainable Development Networking Programme

SEMP – Sustainable Environment Management Program

SWMC - Surface Water Modeling Center

UGC – University Grants Commission

US – Unnayan Shamunnay

VSAT – Very Small Aperture Terminal

WAN – Wide Area Network