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Bangladesh

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INTRODUCTION

Bangladesh is classified among the world's least developed countries (LDCs). It also has the highest population density in the world: around 150 million people live in a tiny territory of 147,570 square kilometres. But in 2001–2005, Bangladesh experienced a dramatic reduction of poverty, with poverty headcount rates declining significantly in both rural and urban areas.[1] The poverty gap (depth of poverty) and squared poverty gap (severity of poverty) also declined in 2005 (BBS 2006). In short, poverty reduction is occurring at a relatively faster pace than in the past.

Nevertheless, poverty remains a problem and poverty reduction continues to be the focus of national development. Information and communication technologies (ICTs) are considered an important tool in development efforts. The poverty reduction strategy paper for 2005–2007 identifies several measures for mainstreaming ICTs in economic development. Progress has been achieved in some areas, such as in mobile telephony, but it has been slow in others.

TECHNOLOGY INFRASTRUCTURE

Robust growth characterized the telecommunications sector of Bangladesh in 2007. While mobile teledensity had been predicted to reach 10 percent by 2010 (Raihan 2007a), actual teledensity by end of 2007 stood at 22.91 percent, more than twice the target (BTRC 2008). There were 34 million mobile phone subscribers by the end of 2007. Competition policy and deregulation account for this phenomenal growth in the mobile sector.

In contrast, the fixed/PSTN market has seen modest growth — 1.19 million Public Switched Telephone Network (PSTN) subscribers at the end of 2007 from 1.01 million in June 2006 (17.82 percent) — because the major market, Dhaka city, was closed to competition until July 2007. In March 2007, the Bangladesh Telecommunications Regulatory Commission (BTRC) invited bids from private operators for four licences to operate fixed-line connections in Dhaka. The new operators started setting up connections in September 2007. With the deregulation of the coveted Dhaka city market, a 100 percent growth in the PSTN market is expected by the end of 2008. BTRC divided the country into five zones and granted 35 licences to 15 private sector PSTN operators under the open licencing system in the north-east, south-east, north-west, and south-west zones.

The fierce competition among the mobile telecom operators led to a nosedive in call rates within the domestic market. Some operators offer calls for only 0.4 cents per minute, the floor rate fixed by the regulator. Among South Asian countries, Bangladesh offers the lowest mobile phone call rates (Samarajiva and Zainudeen 2008).

As of April 2008, 85 percent of the country had mobile coverage. The government announced the penetration of the mobile phone network in the remaining three hill-districts (initially only in municipal areas) in May 2008. The licence to operate in these districts had been pending due to the insurgency problem.

In contrast to mobile service uptake, Internet adoption has been slow, mainly due to the high price of Internet connectivity. The expectation was that after Bangladesh got connected to the

information super highway via the South East Asia–Middle East–Western Europe–4 (SEA–ME–WE–4) submarine cable, the quality of Internet connectivity would improve and cost would be reduced. Indeed, data transfer capacity went up to 14.78 Gbps, 64 times higher than total capacity at the time of installation in May 2006. By June 2007 the utilization was up to 3.28 gigabytes. But the state-owned Bangladesh Telecommunications Company Limited (BTCL) fixed an exorbitantly high price for bandwidth. Thus, the Internet service providers (ISPs) have not been able to reduce the price of bandwidth for subscribers. Moreover, many ISPs have had to maintain redundancy by using very small aperture satellite-based (VSAT) connectivity due to the unreliable fibre optic connection.

In response to lobbying by various stakeholders, BTCL reduced Internet tariff charges by 20–40 percent in February 2008. Charges for monthly office use came down to about USD 10 from about USD 14.3, and the annual cost of leased Internet access up to 2 Mbps came down to about USD 20,571 from about USD 27,428. It is expected that the reduced rates would result in a net gain of USD 12.5 million as the user base would increase threefold due to the price reduction.[2]

But industry stakeholders consider the revised rate to be still high compared to rates in neighbouring countries. For example, the reduced rate is 10 times higher than the price for the same bandwidth in India. The USD 35.1 million investment cost of the existing submarine cable has already been recovered, which is a strong argument for further reducing Internet access rates to make them at par with the rates in other countries in the region.

BTCL was allowed to own the only submarine cable network in spite of a provision in the telecom law that states:

> If an operator provides more than one service, but there exists competition in the market in providing one of such services and no competition in case of another service provided by him, then subsidy from the earnings of the service which is subject to competition shall not be allowed for the other service which is not subject to competition. (Bangladesh Telecommunications Act 2001, Section 49, Sub-section C)

Exclusive ownership of the submarine cable's landing station has extended BTCL's monopoly to data connectivity and the Internet market. This monopoly is the primary reason for sluggish growth in the use of the available bandwidth. In May 2008, the government decided to allow the private sector to install and operate a submarine cable, which is expected to reduce the price of Internet connectivity.

Responding to public demand, BTCL revised the rates for Internet services anew in the first half of 2008. For organizational users, the price is now BDT 27,000 per Mb. There is a special 75 percent discount for research organizations and primary schools will get 64 Kbps Internet connections free of charge. This can be a good opportunity for rural ICT initiatives.

On the other hand, the security of the submarine cable remains an issue. Since the installation of the cable in May 2006, connectivity has been disrupted 24 times. The Bangladesh Telegraph and Telephone Board (BTTB) has identified the cause as sabotage. The uneven competition among various players in the Internet connectivity market is probably one of the reasons for such 'sabotage'.

The demand for telecom and Internet services is expected to shoot up in the next three years with the implementation of the government's International Long Distance Telecommunication Services (ILDTS) Policy in the second half of 2008. The policy legalizes Voice over Internet Protocol (VoIP) services. Total bandwidth demand is expected to reach at least 15 Gbps in 2011, saturating the current capacity of the submarine cable. To prepare for this eventuality, BTCL has signed a deal with the Power Grid Company of Bangladesh for backup fibre-optic connectivity. There are also offers to establish redundant fibre optic lines from various private sector companies or consortiums, including Mahanagar Telephone Nigam Ltd (MTNL), VSNL, Bharti, BSNL, Reliance Communications, VSNL International, Asia America Gateway Cable, SEA–ME–WE–3, SEA–ME–WE–5, and the South Asia Subregional Economic Cooperation (SASEC).

The inadequate power supply in the country also impacts negatively on the growth of the ICT sector. Many domestic and international agencies are working to find solutions, with some focusing on alternative and cheaper power sources and others focusing on low-power ICT equipment.

KEY INSTITUTIONS AND ORGANIZATIONS DEALING WITH ICT

The ICT Task Force was formed under the Prime Minister's Office in 1997 to foster the integration of ICTs in mainstream economic and governance activities. But the Task Force has met only three times since it was established. Mainstreaming ICT activities through the Prime Minister's Office did not work and in fact disempowered the Ministry of Science and ICT. The caretaker government recently took the initiative of revitalizing the ICT Task Force. However, the government has become preoccupied with election-related matters (with elections due to

be held in December 2008) and the initiative to accelerate ICT integration is now shelved.

On the other hand, the BTRC became more visible after its current chairman started introducing discipline in the telecom market. The role of the BTRC is to create a level playing field in the telecom market through various market-based provisions, including licencing for different kinds of connectivity and value-added services. However, its authority is limited because the various components of the telecom industry are under different ministries. For example, broadcasting is regulated by the Ministry of Information, and ICT is under a separate ministry. BTCL enjoys a monopoly over VoIP and submarine cable-based Internet connectivity, which contradicts the Telecom Act 2001. Although the BTRC is trying to impose some discipline in this area, the Ministry of Post and Telecom is creating a barrier for fear of losing revenues.

The Bangladesh Telecentre Network is a coalition of organizations that emerged in 2007 to promote the telecentre movement in Bangladesh. It has launched Mission 2011 (www.mission2011.net.bd), a movement to build a sustainable information and knowledge system for the poor and the marginalized by 2011, the 40th anniversary of Bangladesh. Bangladesh Telecentre Network's action plan articulates two objectives:

1. Building awareness among stakeholders, including the government, about the importance of building an information and knowledge system for the poor through the establishment of a network of ICT-based telecentres.
2. Supporting grassroots telecentres, and ensuring their sustainability and scalability, by strengthening their capacity to offer services.

As of October 2008, 2,012 telecentres have been established in Bangladesh. Mission 2011 has attracted the support of the government and the international community.

ICT AND ICT-RELATED INDUSTRIES

The export volume of the country's software sector declined in 2007 due to uncertainty in foreign investment and the shifting of some business to Nepal, Vietnam, and the Philippines. Software export earnings in 2007–2008 increased to USD 30 million in 2007–2008, after a slight fall in 2006–2007 (USD 26.08 million compared to USD 27.01 million in 2005–2006).

Until 2007, the sector had enjoyed steady exponential growth.[3] But the full potential of the ICT export sector has yet to be realized due to inadequate supply of skilled human resources, inadequate project management skills, inappropriate

and inadequate financing, and inadequate attention given to marketing. Another reason could be the government's lack of confidence in the sector's potential, as evidenced by the fact that the plan to build a technology park has remained unrealized for almost a decade. Moreover, not enough attention is being given to improving the quality of primary and secondary education.

KEY ICT POLICIES, THRUSTS, AND PROGRAMS

A Pentium 4 computer with 128 MB of Random Access Memory (RAM) and a full set of accessories can be purchased in Dhaka and other cities for approximately BDT 28,000 (USD 400) if it is a clone, or about BDT 55,000–70,000 (USD 750–1,000) if it is branded. This has been made possible by the zero tax policy implemented since 1998. The policy has made Bangladesh the fastest growing personal computer (PC) market in South Asia.

A more recent policy is the ILDTS Policy 2007 that came on the heels of the government drive against illegal VoIP services. Among others, the policy bars foreign telephone companies and ISPs and those owned by non-residents from obtaining licences to operate any kind of system through which overseas calls can be channelled, including the International Gateway (IG), Interconnection Exchange (ICX), and Internet Exchanges (IX). The policy also requires ILDTS operators to provide call detail records and to install monitoring facilities for voice and data calls that shall be accessible to the BTRC. The new policy makes it mandatory for all telecom operators to give law enforcement agencies access to records in the name of lawful interception, in accordance with the Bangladesh Telecommunication Act of 2001.

The hard-line stance was taken because all of the phone companies, including foreign investors and ISPs, were found to have been involved in illegal VoIP activities that were depriving the government of millions of dollars in revenue from overseas calls. The initial assessment of lost government revenue due to illegal VoIP was around USD 295 million per year, but the latest assessment puts the figure at around USD 2.2 billion a year.

In December 2007, the BTRC organized an open auction for setting up three IGs to handle IP-based phone calls using landline and cellphone systems, the submarine cable, and the overseas phone exchanges. Setting up the IGs and associated system would effectively eliminate illegal VoIP activities.

The new policy apparently favours domestic companies. But time will tell whether these companies will be able to make the large investment (about USD 135 million) required for ILDTS. The policy might have the unintended effect of encouraging the entry of more middlemen. Moreover, when the new system

adds new operators, they would charge the phone companies extra for each call, a charge that would ultimately be passed on to subscribers. Technology transfer would also be an issue as foreign companies are likely not to be interested in investing in local telecoms infrastructure development without a share of the revenue. It is likely that business consortiums will be formed to bid for the new licences.

The BTRC also intends to stop the use of VSATs by the ISPs to pave the way for a single gateway for international data exchange. This decision would reduce the scope for redundancy of the private operators vis-à-vis the BTCL. VSATs are now providing an important backup for the on-land fibre optic line linked with the submarine cable that connects Bangladesh to the information highway. When the fibre optic line between the submarine cable in Cox's Bazar and Chittagong's phone network is cut off, the VSATs provide a slower but workable backup.

The BTRC has also initiated the licensing of call centre businesses. Call centre entrepreneurs will enjoy a tax holiday for three years in Dhaka and Chittagong and five years in other parts of the country. The cost of obtaining the licence is BDT 5,000 (USD 72) for five years, with no renewal fee.

LEGAL AND REGULATORY ENVIRONMENT FOR ICT DEVELOPMENT

Witch-hunt for Copyright Violators

In January 2008, the Patent and Copyright Office in Dhaka issued a public notice in the daily newspapers stating the penalty for copyright violations (i.e. up to five years in jail plus fines). The move was supported by Bangladesh Association of Software and Information Services (BASIS), the national software association. However, unless awareness of copyright issues among all stakeholders, including law enforcers, is raised, it is doubtful whether this drive against copyright infringement would benefit the new economy.

In fact, the reason for the crackdown on copyright violators is unclear. The WTO Agreement on Trade Related Aspects of Intellectual Property Rights stipulates that LDCs are exempted from copyright obligations until 2013. In a country like Bangladesh, there should be a longer transition period to full enforcement of an intellectual property regime. A strict enforcement would be tantamount to blocking access to ICTs for the majority of the population and small- and medium-enterprises as the income level of these groups do not allow them to purchase proprietary software. In addition, alternatives to copyright systems, such as use of open source and open content, should be given more attention.

The Right to Information

The government enacted the Right to Information Act 2008 through an ordinance in October 2008. It was a longstanding demand of the civil society of Bangladesh, which worked closely with the government to draft the Act. Sixty-five countries have enacted Right to Information laws. In the Indian sub-continent, India passed the Right to Information Act in May 2005 and Pakistan promulgated an ordinance ensuring people's access to information in June 2002. The UN General Assembly recognizes freedom of information as a fundamental right and the touchstone of all freedoms to which the United Nations is consecrated. The right to information enables citizens to seek information from government and it requires government to proactively disseminate important information even when no demand or request for it has been made. The promulgation of a Right to Information law in Bangladesh is expected to give communities greater access to and enhance their participation in information-related activities.

The Right to Privacy

In October 2007 the Rapid Action Battalion (RAB) and BTRC ordered ISPs to provide them with a complete list of Internet subscribers and their confidential data in order to profile the country's Internet users. Names, addresses, connection and usage details, and server passwords were among the information requested. All 72 ISPs in Dhaka, Chittagong, and Sylhet were also required to install RAB 'traffic scanners' on gateway routers and give each subscriber's Multi Router Traffic Grapher URL user id and password to allow monitoring of Internet usage (Mendoza 2007). In addition, RAB and BTRC members began searching homes with high-speed Internet connections.

All these were supposedly part of the government's crackdown on VoIP operators that began in December 2006. But it is difficult to understand why 'regular home users' were included in the VoIP crackdown. Section 43 of the Bangladesh Constitution recognizes a person's right to privacy of correspondence and other means of communication. By taking extreme measures against illegal use of VoIP, BTRC has ended up violating this basic right.

Operationalizing the ICT Act

ICT entrepreneurs are expecting the ICT Act of 2006 to pave the way for the growth of e-business in Bangladesh. The ICT Act provides a framework for electronic authentication of transactions and payments, including the creation of a digital signature certification authority. The Act also includes a

provision for curbing cybercrime. However, due to lack of understanding and confidence among the relevant authorities, particularly Bangladesh Bank, the country's central bank, the Act has not been operationalized.

DIGITAL CONTENT

The launching of the Bangladesh Government (BG) Press (www. bgpress.gov.bd) in February 2008 was an important event in the history of facilitating access to government information. BG Press is the single point of publication of all gazettes and documents related to the functioning of the government and the state. Initially, the website will publish gazettes released in 2008 and 2007. An earlier digital content initiative made government forms more accessible to citizens via the Web service www. forms.gov.bd. Many people access and download the forms through telecentres for a minimal fee.

Local digital livelihood content generation by NGOs gained further momentum in 2007. A new portal, www.ruralinfobd.com, emerged in late 2007 following the path of www.jeeon.com.bd, the largest portal in the Bangla language. It was developed for telecentre operators by a private sector entity named WinBD, with financial support from a donor consortium.

The United Nations Development Programme (UNDP) has also sponsored the development of animated content in three areas: livelihood, indigenous knowledge, and conversion of content for visually impaired citizens.

The Bangladesh Telecentre Network and KATALYST, a donor consortium project for small and medium enterprise development, are working with government content generating institutions, while the Development Research Network (D.Net) has trained a group of volunteers in the rural areas for in creating local content.

The Bangladesh Open Source Network (BdOSN) has been systematically promoting the Bangla Wiki (http://bn.wikipedia. org) with a network of volunteers. The Bangladeshi media industry has also made significant progress in generating and promoting Bangla content in text and audio-visual formats. All newspapers and electronic media houses in Bangladesh have a presence on the Web.

ONLINE SERVICES

As part of efforts to ensure free and fair national elections, the caretaker government developed a new voter list that also included photographs and finger prints. This was a response to the Election Commission's finding that there were 12.2 million fake voters in the old voter list. The new voter list of some 80 million voters was prepared over 18 months by the Bangladesh Army with the support of the UNDP, using 8,000 laptop PCs. The government has also issued an all-purpose national identity (ID) card that citizens need to access many citizen services. This was the largest ICT project in the country implemented using local expertise.

In November 2006 GrameenPhone Ltd, in cooperation with Telemedicine Reference Centre Limited (TRCL), launched a health information service known as HealthLine. This is a 24-hour medical call centre through which GrameenPhone subscribers can consult with licenced physicians. Given the average of one registered physician for every 4,000 people in Bangladesh, this service could have a significant impact on primary healthcare provision in the country. Some of the services initially available under this program are:

- Information on doctor and medical facilities
- Information on drugs or pharmaceutical products and services
- Information on laboratory test reports (interpretation)
- Medical advice/consultation with a doctor (for registered subscribers)
- Help and advice during a medical emergency.

A call to the HealthLine number costs BDT 15 (USD 0.20) for the first three minutes and USD 0.065 per minute thereafter. There is also a one-time registration fee for some of the services. In addition, a subscriber can send a request by SMS to designated diagnostic centres for pathology/radiology test reports to be delivered to the subscriber's address. A short message service (SMS) request is charged BDT 10.

To start with, a database of registered doctors (8,000+), clinics, hospitals, medical facilities (850+), diagnostic centres (250+), and drugs has been created. More services, facilities, deliverables, and information will be added to the database. GrameenPhone is also aiming to offer this telemedicine service via its Community Information Centres.

The HealthLine service is based on a successful experiment by D.Net in 2004 that showed that majority of call centre queries are health-related.

Another promising mobile phone-based service is CellBazaar (see 'CellBazaar').

ICT-RELATED EDUCATION AND CAPACITY-BUILDING PROGRAMS

ICT education in Bangladesh is generally concentrated at the tertiary level. Although there is an optional course on computers

CellBazaar

GrameenPhone Ltd and USA-based CellBazaar have introduced a service connecting buyers and sellers through mobile phones. The service enables sellers to list details of their products or services in a database that buyers can access through SMS. For example, a customer looking for an IBM laptop within the price range of BDT 25,000–30,000 can send the following SMS to the CellBazaar number:

    buy ibm
    laptop
    25,000–30,000

   The customer will get a reply listing available IBM laptops within that price range. The customer can then select from the list and send an SMS with the item number to 3838 to get the contact number of the person selling the laptop.
   The system does not handle transactions; it simply puts buyers and sellers in contact with each other via mobile phone. But it saves buyers a lot of time and transport costs. The system also has the effect of making price information more transparent and widely available.
   Bangladesh has around 34.37 million mobile phone subscribers, with five mobile service operators. Currently the CellBazaar platform can be accessed by 16.48 million mobile phone users through GrameenPhone. The system, which is a brain child of Kamal Quadir, CEO of CellBazaar, was developed at the MIT Media Lab of the Massachusetts Institute of Technology.

(Source: Rajputro 2006)

in the secondary schools, the course curriculum is outdated and there is little opportunity for hands-on practice. Only 10 percent of schools have computer facilities and few teachers are trained and/or willing to teach computer literacy classes.

There are a number of private initiatives to extend ICT education in secondary schools. The most noteworthy is the Computer Learning Programme sponsored by the Volunteers' Association for Bangladesh New Jersey Chapter (www.vabonlilne/vabnj), a group of US-based Bangladeshis. The initiative, which is being implemented in collaboration with D.Net, aims to establish 1,000 school-based learning centres by 2010. To date, 100 centres have been set up. Another private sector initiative is the School Online Program of Relief International, which has set up 27 Internet learning centres. British American Tobacco's 'Disharee', which provides ICT skills training and job counselling services to the children of tobacco farmers, is also noteworthy.

The lack of local content is also a barrier to increased use of ICT in schools. To address this gap, the Institute of Education and Development at BRAC University, in collaboration with the Foundation of Education Research and Education (FERI) and D.Net, is developing interactive digital content in science and mathematics for Grades 6–10 students. BRAC University has also developed a CD-ROM for English language learning based on the national curriculum. D.Net has developed 'Computer Teaches Everyday English', an English language learning Compact Disc-Read Only Memory (CD-ROM) for secondary school students. These materials are currently being tested.

ICT in non-formal education (NFE) in Bangladesh is more vibrant. A study commissioned by UNESCO, Bangladesh (Raihan 2007b) identified 23 organizations that are involved in developing various kinds of ICT-based learning materials for the NFE sector. The study found 195 such materials developed since 2004. Over 60 percent of the materials are video, animation, or a combination of the two. Video compact disc (VCD) is the most common format used since there is a higher degree of penetration of VCD technology in the rural areas. Over 60 percent of the materials are intended for children, students, and youth groups and 18 percent are for the disabled. There are no materials for the aged and for indigenous people.

The developer institutions identified the following constraints to educational content development: lack of a ready market, inadequate and irregular funding, lack of proper facilities for developing high-quality ICT-based materials, lack of skilled professionals, inadequate experience of educationists in ICT-based materials development, low penetration of ICT, and power supply interruptions.

NGOs generally develop materials for their own outlets. Some also supply other NGOs either for free or for a nominal charge. A few NGOs sell their products through retail chains. The Bangladesh Centre for Communication Programs (BCCP)

outsources marketing and sale of their 'Nijeke Jano' (Know Yourself) package to a commercial outfit.

D.Net and BCCP are piloting revenue models for ICT-based materials. Studies show that there is a demand for quality ICT-based materials and organizations are ready to pay for them. Although the current market size is relatively small and the number of developers is limited, there is a big opportunity in this segment of the market with approximately 150,000 groups and organizations running NFE programs. Moreover, the plan to establish 40,000 telecentres by 2011 implies a significant expansion of the potential market for ICT-based literacy and skill training materials.

OPEN SOURCE/OPEN CONTENT INITIATIVES

The open source and open content movement is gaining momentum in Bangladesh through the efforts of the Bangladesh Open Source Network (BdOSN). One of the organization's major programs is the Open Source Camp, which provides users with hands-on experience with GNU's Not Unix Linux (GNU Linux), Open Office, Mozilla, Linux, Apache, Mysql and Php/Link Access Procedure for Modems/Windows, Apache, Mysql and Php (LAMP/WAMP), and Wikipedia. BdOSN also established the Open Source Support Centre in Dhaka in 2007. The centre, which is run by volunteers and which is the first of its kind in Bangladesh, distributes compact discs (CDs), books, and other materials on open source and open content, and provides hands-on support to users.

In addition, the Bangladesh Telecentre Network and BdOSN are working together to provide software and training to grassroots telecentre operators. BdOSN is also providing training on open source technology to 740 government officials.

Bangla Wikipedia is growing rapidly with many contributions from all over the world. The total number of entries is now more than 10,000. Bangla Wiki, a wing of BdOSN, is expanding, modifying, and improving the wiki articles. They have also taken the initiative to increase the number of articles about Bangladesh in the English Wikipedia.

ICT FOR DEVELOPMENT RESEARCH AND DEVELOPMENT

In 2003 D.Net started the Pallitathya action research to determine the role, if any, of access to information and knowledge in poverty alleviation. The Pallitathya model promotes an information and knowledge system for the poor and marginalized with five components: content, multiple channels of information and knowledge exchange, an Infomediary, ownership, and mobilization. Content has been developed in nine areas: agriculture, health, education, non-farm income generating activities, awareness, employment, disaster management, directory information, and appropriate technology. This is now packaged as the Jeeon Information and Knowledge Base on an open source Web-based content management system (www.jeeon.com.bd) that is available to all telecentre-based and individual users across the country. Video and voice content is also being developed as the second generation content. 'Moni — the mobile lady' is an example of animated content on the system. Moni is a character who promotes livelihood information services door to door. D.Net has established common access points called Pallitathya Kendra in 39 remote villages of Bangladesh after the model was successfully tested in four villages.

D.Net has experimented with other modes of making information services available to rural users. One of these is 'mobile ladies', women sitting at help desks who use mobile phones to put rural users in touch with experts on various livelihood issues. Among the experts who respond to queries from villagers are lawyers, agriculture specialists, veterinary doctors, and education specialists. The mobile lady concept has been integrated with the Pallitathya Model, making possible a 'no refusal' and 'no exclusion' policy for accessing information and knowledge.

As part of a research and development (R&D) program, D.Net has developed the concept of Benefit on Investment which measures in monetary terms the benefits that a community receives from a telecentre. Some benefits cannot be monetized. But benefit on investment is a broader concept than return on investment (ROI) and is a better basis for determining sustainability, as it highlights the role of the community and of the government as providers of common goods (Raihan 2007a).

CONCLUSION

In general, the ICT sector of Bangladesh showed a vibrant performance in 2007–2008. There were some well considered policy moves in a number of areas that gave stakeholders hope. Mobile telephony continued its robust growth, while some signs of growth were also observed in the Internet market. Further streamlining of policies and regulation to encourage healthy competition and adequate provision of public goods, where required, is expected. Most of all, a public-private partnership in building a telecentre network across the country will make possible a dramatic improvement in public access to ICTs and ensure that e-governance services will reach marginalized communities nationwide.

NOTES

1. According to the household income and expenditure survey (HIES) of 2005, the headcount rate or incidence of poverty based on the upper poverty line was 40 percent (43.8 percent rural and 28.4 percent urban). The headcount rate based on the upper poverty line in 2000 was 48.9 percent (52.3 percent rural and 35.2 percent urban). Head-count rates based on the lower poverty line stood at 25.1 percent in 2005 (28.6 percent rural, 14.6 percent urban), and 34.3 percent in 2000 (37.9 percent rural and 19.9 percent urban).

2. There would be a 45 percent loss due to the reduction of tariffs worth about USD 4.6 million, but the price reduction is expected to lead to a threefold growth in the user base and additional income worth about USD 17.1 million.

3. Bangladesh earned USD 4.20 million from the export of software in 2002–2003, USD 7.19 million in 2003–2004, and USD 12.68 million in 2004–2005.

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