INTRODUCING E-GOVERNMENT IN BANGLADESH: PROBLEMS AND PROSPECTS

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Introduction

Use of Information & Communication Technology (ICT) in government activities has become a common phenomenon in recent years. In the late 1990s, ICT introduced a unique concept—electronic government (e-government)—in the field of public administration. To date, various technologies have been applied to support the unique characteristics of e-government, including electronic data interchange, interactive voice response, voice mail, email, web service delivery, virtual reality, and key public infrastructure.[1]

The web and other technologies have shown potential as effective and efficient managerial tools that collect, store, organize, and manage voluminous information. The most current information can be uploaded and downloaded on the Internet on a real-time basis. Governments can also transfer funds electronically to governmental agencies or provide information to public employees through an intranet or Internet system. Additionally, governments can perform many routine functions more easily and quickly (i.e., responding to employees' requests for benefits statements). Web technologies also facilitate government links with citizens (for both services and political activities), other governmental agencies, and businesses. Government websites can serve as both a communication and public relations tool for the general public. Information can be shared with and transferred to external stakeholders (businesses, non-profit organizations, interest groups, or the public). In addition, some web technologies, such as interactive bulletin boards, enable governments to encourage public participation in policy-making processes by posting public notices and exchanging ideas with the public. As a consequence, some governments have promoted virtual democracy by encouraging web-based political participation through on-line voting and on-line public forums.[2]

These far-reaching developments in e-government have encouraged governments around the world to establish an on-line presence by publishing statistical information on the Internet. In so doing, they hope to increase efficiency, effectiveness, and organizational performance.[3] Countries, irrespective of their developing characteristics, are constantly striving to improve the efficiency and effectiveness of e-government delivery services. They hope that e-government will emerge as a magical antidote to combat corruption, red tape, bureaucratic inefficiency and ineffectiveness, nepotism, cronyism, lack of accountability, and transparency.

Bangladesh has joined the race toward adopting e-government. This study examines that effort by addressing the status of ICT in Bangladesh. It analyzes the initiatives of the Bangladesh government, commitment of political leadership, and the enthusiasm of private entrepreneurs to introduce e-government in Bangladesh. It concludes that e-government preparation in Bangladesh is still in its primary stages and has not fulfilled its poten-

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tial due to technical, infrastructural, and political obstacles. A coordinated effort of political leadership, bureaucrats, and private entrepreneurs could facilitate the desired development in the ICT sector and accelerate the presence of e-government in Bangladesh.

E-government: An Overview

While still in its early stages of development, a clear definition of e-government has yet to emerge.[4] A recent joint research initiative for the study of e-government sponsored by the United Nations Division for Public Economics and Public Administration and the American Society for Public Administration defined e-government as "utilizing the internet and the world-wide-web for delivering government information and services to citizens."[5] According to the World Bank, e-government refers to governmental use of information technologies (such as Wide Area Networks, the Internet, and mobile computing) that have the ability to transform relations with citizens, businesses, and other agencies of government.[6]

Interest in e-government in general, and in electronic service delivery in particular, is best viewed as a response to the growing fragmentation and complexity of government. It has become fashionable to conceive of government as a set of "information silos" that establish barriers that inhibit access to information.[7] E-government, at least in the eyes of public service users, promises to dissolve these barriers.[8] This can produce several benefits, including reduced corruption, increased transparency, greater convenience, revenue growth, and empowering people to participate in political processes that affect their lives directly. In short, use of ICT in government facilitates an efficient, speedy, and transparent process for disseminating information to the public and other agencies, thus enhancing government administration performance.[9]

In response to this transition in the context of governance, the state, in almost every instance, has taken the necessary initiatives to restructure political and administrative institutions by adopting ICT in order to enhance electronic interaction and service delivery. Today, public servants are encouraged and trained to be familiar with the tools and languages of ICT. ICT offers three information processes to promote governance:

—*Automation*: replacing current human-executed processes, which involve accepting, storing, processing, outputting or transmitting information (i.e., the automation of existing clerical functions).
—*Informatization*: supporting current human-executed information processes, namely supporting current processes of decision-making, communication, and decision implementation.
—*Transformation*: creating new ICT-executed information processes or supporting new human-executed information processes. For example, creating new methods of public service delivery.[10]

For most United Nations member states, electronic service delivery, or e-government, remains a new and challenging medium. E-government encompasses many applications and incorporates virtually all ICT platforms. The Internet is the most widely recognized and identifiable component driving e-government. A major indicator of a society's openness has become its access to information available on the Internet.[11] Downloading public sector information has become one of the most frequent uses of the Internet. Governments

are rapidly embracing the Internet to facilitate an increasing number of transactions, including procurement, tax collection, vehicle registration, and the issuance of permits and licenses. The Internet may well become an ideal medium for many public sector transactions because they are relatively straightforward and require neither physical examination of products nor personal contact.[12]

Information technology also can empower rural people by providing them with both access to information and the tools for analyzing it. In agriculture, for example, systems technologies can help farmers in the area of crop management by providing information concerning planting date selection, water use and management, pest and disease control, and harvest management. The Land Information System, to cite a specific example, provides information concerning markets, food pricing, imports and exports, tariffs and quotas, underproduction and overproduction as well as information on soil, hydrology, and rainfall that support planning activities at various administrative levels.[13] Availability of such information in a timely manner would assist farmers in making decisions that would ensure increases in productivity.

Use of ICT by the government in the education, health care, and environment sectors can also prove beneficial. In education, it can increase literacy rates significantly. Web-based education and e-learning have emerged as handy tools for distance learning. Both video and computer conferencing have made it possible for students in remote rural regions to have access to teachers anywhere in the world. The Digital Revolution also has had a major impact on the delivery of health care. It allows for an efficient exchange of information, such as patient's records and medical diagnosis, between health professionals, which improves the quality of health care. Government can use information technology applications for effective management and monitoring of environmental resources. This would enable authorities to take appropriate actions in case of emergencies. It would also prove helpful in such areas as air and water quality monitoring, pollution warning systems, public environmental information services, and environmental emergency management systems for floods, forest fires, and other natural disasters.[14]

In sum, e-government is defined by inter-organizational relationships that promote policy coordination and implementation, and by the delivery of services on-line or through other electronic means to citizens. This includes:

—Developing citizen-centric programs
—Promoting and enhancing citizen participation
—Perfecting on-line service delivery through analysis and evaluation, measuring efficiency, and benchmarking against other forms of service delivery
—Country indexing (performance measurement benchmarking): portal analysis; website analysis[15]

Discussions concerning electronic governance often produce speculation concerning electronic voting, daily electronic policy referenda, and whether electronically enabled direct democracy will eventually eclipse representative democracy. The subject appears much more conjectural than possible. In the private sector, a business model for electronic service delivery has emerged, but a comparable model of electronic governance has yet to be developed.[16]

Current Status of ICT in Bangladesh

ICT is the most popular term in Bangladesh today. Almost every middle class family owns a computer. Opening up a cyber café, a computer showroom, or a club; publishing a digital magazine; providing Internet service; designing and hosting a website; or participating in computer fairs or web programming contests have all become part of the information technology (IT) culture in Bangladesh. Every daily newspaper and magazine publishes a special weekly supplement containing recent news and discoveries relating to ICT. Numerous IT fairs and workshops are held throughout the year in cities, districts, and even villages. Noticeably, the young generation of Bangladesh is taking the lead in these IT efforts.[17]

The Computer

The computer was first introduced in Bangladesh in 1964 with the installation of an IBM 1620 computer at the Atomic Energy Commission. Numerous computers were installed in financial institutions simultaneously. In the late 1980s, the printing and publishing industry began using computers and thus played a pioneering role in popularizing the use of personal computers (PCs). PCs gained in popularity in the early 1990s following an adjustment of taxes on PCs and accessories. Since then, on average, approximately 100,000 PCs are purchased annually. The growth rate of PC sales has averaged approximately 32.4% annually.[18]

The Internet

IT activities started in Bangladesh in 1993 with the introduction of e-mail service using dial-up connections offered by three Internet Service Provider (ISP) companies. On June 4, 1996, Bangladesh tested the Internet (VSAT-based) for the first time. Its high cost, however, limited access to the Internet to business users. The Bangladesh government's decision to deregulate VSAT reduced this cost and opened the door for general users to access the Internet at a cheap rate. Currently, anyone can browse for one hour by paying US$0.50. Broadband Internet is also available for US$16 per month. By November 2002, almost sixty-five ISPs were operative in Bangladesh using approximately 1,400 telephone lines.[19] There are almost 200,000 Internet users in Bangladesh, and ten PCs per 100 residents.[20]

Telecommunication Infrastructure

The Bangladesh Telegraph & Telephone Board (BTTB) exercises monopoly control in developing the telecommunication infrastructure of the country. At present, there are 715,000 fixed-line telephone subscribers, 1,381 card phone centers, 630 public call offices, 3,936 international circuits, and 21,930 nation-wide dialing circuits in Bangladesh.[21] BTTB has started to build a national structure for high speed Digital Data Network to connect the sixty-four district headquarters. In an effort to reduce the "knowledge gap" between people living in urban and rural areas, the company plans to expand Internet facilities to the Upazilla (sub-district) level by 2006. In addition, BTTB has initiated two new projects—one to install 1,000,000 mobile telephones with Internet access, the other to install 500,000 fixed telephones throughout the country.[22] Bangladesh has already joined the fourteen nation SEA-ME-WE4 submarine cable consortium to install

submarine optical fiber cable that will provide national broadband connectivity with Information Super Highway access, thus enabling all ISPs, both public and private, to have direct access globally.[23]

The last several years have witnessed a tremendous growth in the use of mobile phones in Bangladesh. This is one sector that has expanded very rapidly across a broad spectrum of society; in particular, the business community has been able to satisfy its demand for telephones previously unmet by the BTTB. Indeed, the number of mobile subscribers has almost reached 1,000,000.[24]

Despite this development, numerous limitations in telecommunication infrastructure have hindered IT growth in Bangladesh. The tele-density of Bangladesh stands at only 0.50, quite low in comparison to other under-developed countries.[25] Individuals have to wait several years to acquire a telephone connection. Additionally, the existing cable is made of copper that does not transmit information/messages as fast as the fiber optic or other cables. Bandwidth, which is very important in accessing Internet, is between 64 kbs and 2 mbs, but most ISPs can use 128 to 256 kbs. Other major limitations, as reported by ISPs, include dependence on BTTB, lack of government assistance, lack of cooperation among the ISPs, and subscriber problems.[26]

IT Companies and E-commerce

Currently in Bangladesh, there are more than 1,000 hardware showrooms and nearly 8,000 IT institutions. More than one hundred companies are involved in software development. Sixteen percent of these firms export their product; ten percent are completely export-oriented. Forty percent sell their software in local markets and forty-eight percent sell their product in both domestic and foreign markets.[27]

Bangladeshi businessmen have already introduced e-commerce, in a limited manner, in Business to Consumer format. Wireless Application Protocol service is also available in Bangladesh allowing for use of the Internet through mobile phones. This has introduced e-commerce to a wide area in Bangladesh. Recently, a U.S.-based Bangladeshi telecommunications engineer introduced a new technology of broadband wireless network suited to the needs of business users in Dhaka, Chittagong, and Sylhet.[28] Thus far, there is no law to protect the interest of cyber consumers, though IT professionals and private entrepreneurs are demanding a law that treats different types of software and programs as intellectual property and provides proper legal actions in case of violation. Expansion of e-commerce in Bangladesh is dependent on the adoption and enforcement of these laws.

IT Education

Bangladesh currently has thirty-one public and private universities as well as four engineering institutes that offer four-year bachelor's degrees in computer science. One hundred thirty-four students are studying computer science in public universities, eighty-four at private universities. There are also some local and foreign IT institutions that offer different types of certificate and diploma courses. National and multinational firms engaged in IT business manage most of those institutions. The government of Bangladesh has already introduced computer-related courses in secondary school and the higher secondary level so that students can become adept at using computers and IT. This effort to boost the IT revolution has had a positive impact on IT culture in Bangladesh.[29]

Financial and Banking Sector

Commercial and financial institutions such as banks, insurance companies, and private business concerns are also using various means of ICT. Everyday, more websites about Bangladesh are being uploaded on the web. Side-by-side voluntary and service-providing organizations are opening up a web entity everyday. All users primarily rely on computers for word processing, e-mail correspondence, accounting, and Internet browsing. Rates of using computers for maintaining database and payroll, for personal e-mail by employees, and for software application are not negligible either.[30]

Most Bangladeshi banks, both public and private, such as Prime Bank (www.primebank.com), Janata Bank (www.janatabank-bd.com), and NCC Bank (www.nccbank-bd.com), have websites containing different types of statistical information. All banks are now computerized, at least at the head office level. Private banks are more computerized than public banks. At present, people can pay their utility bills with their credit/debit cards at any bank in Bangladesh. Some banks provide on-line features that allow customers to check balances and deposits.[31] One survey found that at the branch level nineteen percent of nationalized commercialized banks (NCB), thirty-eight percent of privatized commercialized banks (PCBs), and ninety-seven percent of foreign commercialized banks (FCB) are computerized.[32]

Printing, Publications and Multi-media Sector

Bangladeshi programmers have produced various types of entertainment and educational CDs. Information stored in these CDs range from the history of the country, its independence and war of liberation, to fairy-tales for kids. A number of digital magazines are published every month in Bangladesh in CD-ROM format. On-line versions of most major newspapers and magazines are also now available.[33] More than forty-five IT magazines and periodicals already exist.[34] Most of these are published both in paper and CD-ROM format; some also publish a web version. There are also some private web portals on Bangladesh, notably, www.bangladeshinfo.com, www.bangladesh.net, www.e-bangla.net, www.bangladesh.cc, www.connect.to/bangladesh, www.techbangla.org, www.webbangladesh.com, and www.virtualbangladesh.com.[35]

Government Agencies

Bangladesh has one official government homepage (www.bangladeshgov.org) and some official websites for government agencies, such as the Office of the Comptroller and Auditor General (www.cagbd.org), Ministry of Finance (www.gobfinance.org), Bangladesh Bank (www.bangladesh-bank.org), National Board of Revenue (www.nbr-bd.org), and the Ministry of Science and Information & Communication Technology (www.most-bd.org) that offer statistical information to the user. The country's parliament—the *Jatiya Sangsad*—also has a web entity.[36] Thus far, five ministries and thirty-seven government agencies have their own websites.[37] This is less than ten percent, and no website provides the facility to access or search in-depth information about a specific topic.

Political Parties

Most political parties in Bangladesh have their own websites. They contain information about their history, philosophy, policy, leadership, political messages, membership in parliament, interviews, and press releases concerning issues and campaigns. These websites provide an option to send feedback and played an important role in the last general election held in October 2001.[38]

Political Will of the Government of Bangladesh

Bangladesh is a country dominated by two rival political parties—the Awami League (AL) and the Bangladesh Nationalist Party (BNP). Power has remained principally in the hands of these two parties since the fall of the military dictator, H.M. Ershad, in 1990. Other parties—the Jatiya party, Communist party, Left Front, Bangladesh Jatiya party, and Jamaat-e-Islami Bangladesh, to name a few—often tip the scales of power in favor of the AL or BNP if either party fails to secure an absolute majority in parliament. In 1991, for example, the BNP obtained the support of Jamaat-e-Islami to assume control of parliament.[39] Five years later, the Jatiya party and Jatiya Somajtrantil Dol helped the AL secure control of parliament.[40] Most recently, in 2001, the BNP formed a government with the aid of Jamaat-e-Islami, Bangladesh Jatiya party, and other Islamic parties.[41]

Both the AL and BNP have pursued various measures that have influenced the growth of ICT in Bangladesh. Bangladesh received its first offer to link itself to the Information Super Highway in 1988 by connecting itself to a submarine cable.[42] The government, then led by the military dictator, Lieutenant General H.M. Ershad,[43] rejected the offer, fearful that the free flow of information might cause image problems for his illegitimate government by focusing world attention on the repression of opposition parties trying to establish democracy in the country. Additionally, military and civil bureaucrats associated with Ershad's government lacked knowledge about the Internet and the Information Super Highway to encourage its use. Later, in 1994, following the establishment of democracy, the BNP-controlled government received an offer to connect Bangladesh to the Information Super Highway through a submarine cable together with all South Asian countries.[44] After India, Pakistan, and Sri Lanka accepted the offer, the BNP leadership rejected it under the pretext of protecting classified state information.[45] Ignorance and doubts expressed by the political leadership concerning the utility of the Internet and ICT probably influenced this decision.

After assuming power in 1996, the AL government took the first important step to activate the ICT sector of Bangladesh. It agreed to connect the country with the Information Super Highway through the Bangladesh Submarine Cable Network project, designated ICT as a thrust sector, established an IT Task Force headed by the prime minister herself, and waived taxes on computers and computer accessories.[46] These measures paved the way for rapid computerization and ICT revolution in Bangladesh.

ICT became a central issue in the October 2001 general election in Bangladesh. Both major parties pledged to do "everything" to advance the ICT sector. The current ruling party, the BNP, issued a thirty-two point manifesto to help secure its victory in the election.[29] The manifesto pledged the BNP government to establish an Internet village with skilled IT experts. It also pledged that telecommunication, including Internet facilities, would be made easier to use, less expensive, multi-dimensional, and widespread.

Introduction of mobile phones under BTTB supervision was also promised.[47] BNP's leadership also vowed to prioritize science and information technology. To achieve this, the party promised to establish an IT institute. Additionally, an IT center would be set up in every Upazilla (sub-district) and IT industries would be built throughout the country.[48]

The rival AL party countered with its own twenty-one point election manifesto pledging to alleviate poverty, decentralize administration, and encourage the growth of the ICT sector. The AL manifesto also supported the establishment of an IT Village for the betterment of the promising ICT industry as well as the expansion of IT industry and e-commerce in Bangladesh.[49]

With the BNP back in power, Premier Khaleda Zia reaffirmed her government's pledge to enhance the development of the ICT sector. On February 4, 2002, she announced a grant of 10,000 computers for use in the country's primary schools. She also promised to pursue initiatives to establish cyber cafés at the district level for both teachers and students.[50]

Towards E-government: The Initiatives of the Government of Bangladesh

Over the last few years, various governments of Bangladesh have undertaken major initiatives towards ushering in Information Technology and its tools for the functioning of government. The emphasis has been on providing better services to citizens and increasing productivity. In an effort to determine the extent of the global e-government landscape, in 2001, the United Nations Division for Public Economics and Public Administration (UNDPEPA) and the American Society for Public Administration (ASPA) conducted a study of the approaches, progress, and commitment of the 190 United Nations member states in adopting e-government. The study tried to determine each country's e-government environment and its capacity to sustain on-line development through a comparative analysis of fundamental information technology indicators and critical human capital measures for each U.N. member state.[51]

In determining what defines an enabling environment, the UNDPEPA/ASPA report analyzed critical factors by benchmarking the core areas endemic to national e-government programs. The final measure of E-government Index attempts to quantify these factors objectively, and establish a "reference point" for which a country can measure future progress. This index presents a more inclusive and less subjective measure of a country's e-government environment. It examines a country's official on-line presence, evaluates its telecommunications infrastructure, and assesses its human development capacity. The index identifies, underscores, and weighs the importance of the requisite conditions that enable a country to sustain an e-government environment thus ensuring that every segment of its population has unconstrained access to timely, useful, and relevant information and services.

The UNDPEPA/ASPA survey found that twenty-one countries (11%) had no e-government at all; thirty-two (16.8%) had experienced emerging e-government; sixty-five (34.2%) enhanced e-government; fifty-five (29%) interactive e-government; and, seventeen (9%) transactional e-government. None had seamless e-government. Geographically, by region, North America (2.60), Europe (2.01), South America (1.79), and the Middle East (1.76) all registered an index above the global mean (1.62). Asia (1.38), Central America (1.28), and Africa (0.84) fell below the global mean index. Among individual

countries, the United States (3.11) is the current global leader and the only country to register an index above 3.00. The survey placed Bangladesh (0.90) among the countries with a "deficient e-government capacity" where e-government registers a low priority on the policy agenda. The survey, however, noted that Bangladesh recognized the importance of the role technology plays in development and has embarked on e-government programs representative of its development agenda.[52]

Unfortunately, the survey's findings on Bangladesh are true. The country's private sector has taken the lead in popularizing and diffusing ICT. The government has confined itself to changing the name of the Ministry of Science and Technology to Ministry of Science and Information & Communication Technology, and preparing various plans, such as setting up an IT office in the U.S. and Europe to provide support to private IT companies, expanding IT education across the country, offering cash incentives for further development of software industry, and establishing an IT Village/park.[53]

Renaming a ministry probably will not do the ICT sector of the country much good since the responsibilities of the ministry remain the same. Matters related to ICT still come under the control of several ministries. The Ministry of Cultural Affairs, for example, handles copyright law issues. The Finance and Commerce ministries control the importation of computers and accessories. The Ministry of Post and Telecommunication handles matters related to submarine fiber optic cable/broadband. The Ministry of Commerce supervises the software industry, particularly the export-import of software. And, the Ministry of Education oversees programs to expand IT education and computerizing educational institutions throughout the country.[54] To bring about the perfect ICT revolution in Bangladesh, each of these functions should be controlled by one ministry.

At present, there is no ICT policy as part of the overall national plan to promote the socioeconomic development of the country. There is a draft proposal but the government has not finalized it yet. The private sector has already drafted an IT policy and forwarded it to the government for an updated national policy concerning the future course of IT development.[55] Although there is an IT Task Force to harness and utilize the immense potentialities of information technology for the overall welfare of the country, it met only once in 2001.[56] The highlights of the draft IT policy, which, according to government officials, is one of the friendliest IT policies in the world, includes:

—IT declared as a thrust sector
—Waiver on all taxes and duties on the importation of computer hardware and software to increase affordability and proliferation of PC use in Bangladesh
—Tax holiday for software and IT services companies
—Export over Internet or other electronic media recognized under sales contract or agreement without any need for Letter of Credits
—Simplified tax-free export earning remittance procedures with forty percent retention in foreign currency
—Special funds allocated by the government for extending collateral free loans to IT entrepreneurs
—One hundred percent remittance on profit and capital gains for foreign investors without any approval
—Deregulation of the process of acquisition and use of VSAT to facilitate faster, cheaper, and higher-bandwidth connections and to encourage widespread Internet use
—Decision to link the global highway through submarine cable link within two years

—An initiative to establish an IT village within Dhaka and High Tech Park on the outskirts of the city.[57]

Currently, four government agencies oversee matters related to telecommunication in Bangladesh—the Ministry of Post & Telecommunication, Bangladesh Telegraph & Telephone Board (BTTB), the Ministry of Science and Information Communications Technology, and the Bangladesh Telecommunication Regulatory Commission. Lack of coordination between these agencies and ICT entrepreneurs seems to be the root of almost all problems. According to Bangladesh Computer Samity, the association of the computer businessmen, Internet Service Providers Association, and other IT personalities, lack of farsighted bureaucrats is probably the main hindrance to the growth of ICT in Bangladesh. A recent attempt to tax computers and computer accessories for fiscal year 2002-03 best exemplifies this problem.[58] The government later withdrew the proposed tax in the face of massive protest.

BTTB monopoly control in developing the telecommunication structure of the country continues to hinder ICT growth in Bangladesh. BTTB has increased the monthly line rent of the telephones used by the ISPs by 667%. It also imposed an extra tariff on ISPs to pay between Tk. 200,000 and 400,000 (US$3,600-$7,200) per annum depending on bandwidth.[59] A recent BTTB initiative to introduce a "multi-metering" system for local telephone calls is also considered by subscribers and IT professionals to be an expression of bureaucratic bottleneck and technology-skeptic policy.[60] The much-coveted Bangladesh Submarine Cable Network (BSCN) project was supposed to be commissioned by the end of 2002.[61] After a twenty-month wait, BTTB officially abandoned the BSCN project and decided to join the fourteen nation SEA-ME-WE4 submarine cable consortium.[62]

In other countries, governments have come forward as the principal client of domestic software/hardware industries to stimulate the growth of the ICT sector. The experience in Bangladesh is quite different.[63] Here, one finds only a limited effort to computerize the government agencies.[64] Until now, most official jobs have been done manually. Government officials use the latest model computers with Pentium IV processors as typewriters to compose letters or to play games.[65]

Use of different software in office management or in the decision-making process never occurs in Bangladesh.[66] An attempt to use application software for such purposes would help the local software industry grow and play a vital role in training IT professionals. To be sure, almost all government agencies employ system analysts, programmers, web designers, network and hardware engineers,[67] but these employees spend most of their time installing programs in the system or troubleshooting. They are not interested in creating new applications for their respective office—not even for personal or commercial use.[68]

There is no recognized IT cell/department in government agencies to supervise websites yet. There also has been no attempt to update existing websites with up-to-date information regularly. Almost every government agency website contains obsolete information, giving a negative impression of the country. Thus far, no website provides the facility to access or search in-depth information about a specific topic or official document. Bangladeshi-owned web portals and commercial websites—even personal websites—are far better than those of Bangladeshi ministries.[69]

Communications with and within public authorities still depend on telephone and FAX. There are few effective electronic communications within government offices.[70] Among

the more progressive authorities within the government, the National Board of Revenue is perhaps farther advanced than others. It has undertaken a program to link customhouses through an on-line networking system.[71]

ICT has made global trade transactions easier, cheaper, and quicker, but the business community of Bangladesh is still reluctant to pursue electronic trade because existing laws accept only paper documents, signatures, and checks to verify business activity. As global trade is increasingly dependent on electronic forms, Bangladesh urgently needs a proper law to facilitate electronic commerce and eliminate barriers. Singapore enacted the Electronic Transactions Act of 1998, and India recently enacted the Information Technology Act of 2000. In Bangladesh, however, a similar law is still at the draft stage.[72]

Conclusion

A country's social, political, and economic composition correlates closely with its e-government program development. There are exceptions, however, as evidenced by several developing and transitioning economies. Key factors such as the status of a country's telecommunications infrastructure, the strength of its human capital, the political will and commitment of its national leadership, and shifting administrative priorities influence how decision makers, policy planners, and public sector managers elect to approach, develop, and implement e-government programs.[73]

At present, Bangladesh lacks many of the factors necessary to establish e-government. The government continues to struggle in its efforts to provide current information on governmental activities electronically. Not all government agencies possess web identities. To date, Bangladesh Railways is the only government agency that offers electronic service delivery to citizens. That agency has introduced computerized passenger reservation system, thus enabling faster reservation service and less corruption.[74]

Although national leaders seem to possess the political will and commitment to adopt ICT-friendly measures to advance the IT sector and establish e-government, there are still some obstacles to overcome. First, the lack of cooperation and coordination between government agencies and the absence of a national ICT policy have hindered the desired ICT growth in Bangladesh. It is true that there has been an effort to introduce e-governance in a limited range in the ministries by supplying computers and hiring IT professionals in the government agencies under the 'e-governance project' of the Ministry of Science, Information & Communication Technology. But this has done little to encourage ICT growth in Bangladesh.

Second, Internet access is too expensive in Bangladesh compared to Western developed countries. In Bangladesh, the lowest cost to gain Internet access is US$0.50 per hour through a dial-up system. Installation of necessary telecommunication facilities for ISP companies is also at the preliminary stage as the country is still not under the full BTTB telecommunication network. A telephone density of 0.50 connections per 100 people is one of the lowest in the world. This compares unfavorably with neighboring countries, namely India (1.0), Nepal (0.5), Pakistan (2.1), Sri Lanka (1.0), and Thailand (2.5). An installation charge of US$450 for a new line is also one of the highest in the world (e.g., Pakistan US$90, India US$60), and the waiting time for a connection is more than a decade.[75] Except for the capital city of Dhaka and the port city of Chittagong, a telephone connection remains a pipedream for most Bangladeshis. Even in those cities, problems persist in securing telephone connections, but residents in both areas somehow manage the connections through lobbying, and, sometimes, offering bribes to BTTB officials.

Third, the adult literacy rate in Bangladesh is fifty-one percent. Most possess no knowledge in using computers, let alone e-government or electronic service delivery. In a country like Bangladesh, where nearly one-half of the population cannot read and write, this offers little incentive for IT growth.

Fourth, Bangladesh lacks the infrastructural support, e.g., electricity, telephone network. Since only 1.1 percent of the total population enjoys the use of electricity,[76] use of computers remains beyond the reach of the overwhelmingly majority people in Bangladesh. On average, there is only one PC per 1,000 people in Bangladesh as compared to 585.2 PCs per 1,000 people in the U.S.[77] Over the last decade, attempts have been made to lay a submarine cable to increase both the speed of overseas data transmission and Internet service in Bangladesh. Yet one still finds a shortage of IT experts in the country to run existing IT initiatives. Most IT institutions, except public universities, are training computer operators instead of computer professionals.

Finally, the tendency of both ruling and opposition parties to politicize everything in Bangladesh has had an adverse effect on the desired growth of ICT initiatives at both the public and private level. As political power changes hands between the two major parties in Bangladesh, the bitter rivalry between the BNP and AL often results in the abandonment of policies pursued by the previous government. This feature of the country's political culture has stymied efforts to promote the IT sector in Bangladesh.

Despite all of the confusion and frustration associated with ICT initiatives in Bangladesh, e-government is becoming a fact in the lives of the citizens of that country. Perhaps progress is slow and there is confusion about the means to achieve this, but there is no doubt about the goal of attaining e-government. A coordinated effort by political leaders, bureaucrats, and private entrepreneurs is critical to facilitate the growth of the ICT sector, and, hence, the socioeconomic development of Bangladesh.

ENDNOTES

[1]M. Jae Moon, "The Evolution of E-government among Municipalities: Rhetoric or Reality?" *Public Administration Review* 62:4 (July 2002):424. The term "key public infrastructure" refers to the web-based organizations of the government that provide the facility of web-based political participation of citizens/stakeholders through sophisticated interface and interoperable technologies (i.e., chat rooms).

[2]Ibid., 425.

[3]Jim Melitski, "The World of E-Government and E-Governance," http://www.aspanet.org/e-government/melitski.html (April 20, 2003), 1.

[4]Ian Holliday, "Building E-government in East and Southeast Asia: Regional Rhetoric and National (In)Action," *Public Administration and Development* 22:4 (October 2002):324.

[5]United Nations Division for Public Economics and Public Administration/American Society for Public Administration (UNDPEPA/ASPA), *Benchmarking E-government: A Global Perspective: Assessing the Progress of U.N. Member States* (Washington, D.C.: United Nations Division for Public Economics and Public Administration & American Society for Public Administration, 2002), 1.

[6]The World Bank Group, "E-government Definition," http://www1.worldbank.org/publicsector/egov/definition/htm (April 20, 2003), 1.

[7]L. Byrne, *Information Age Government: Delivering the Blair Revolution* (London:

Fabian Society, 1997), 6, quoted in Christine Bellamy, "From Automation to Knowledge Managemant: Modernizing British Government with ICTs," *International Review of Administrative Sciences* 68:2 (June 2002):215.

[8]Bellamy, "From Atomation to Knowledge Management," 215.

[9]Government of Karnataka, "E-governance," http://www.bangaloreit.com/html/egovern/egovern.htm, (April 20, 2003), 1.

[10]Richard Heeks, "Understanding e-Governance for Development," *Information Technology in Developing Countries* 11:3 (December 2001):13.

[11]UNDPEPA/ASPA, *Benchmarking E-government*, 5.

[12]Stanford Borins, "On the Frontiers of Electronic Governance: A Report on the United States and Canada," *International Review of Administrative Sciences* 68:2 (June 2002):200.

[13]Nagesh Kumar and Alka Chadha, "Exploiting the Potential of Information and Communication Technologies for Development in South Asia," *South Asian Survey* 9:2 (July 2002):206.

[14]Ibid.

[15]UNDPEPA/ASPA, *Benchmarking E-government*, 54.

[16]Borins, "On the Frontiers of Electronic Governance," 205.

[17]Sadik Hasan, "Prospects of IT in Bangladesh: The Case of Election Pledges of the Major Political Parties," *Bangladesh Journal of Resources & Development* 1:1 (December 2002):119

[18]Shakhawat Alam, "Electronic Government," *eBiz Magazine*, April 4, 2003, 28.

[19]Hasan, "Prospects of IT in Bangladesh,"120.

[20]UNDPEPA/ASPA, *Benchmarking E-government*, 69.

[21]Badrul Hoque, "ICT for Bridging Digital Divide—Bangladesh Perspective," *Daily Star World Telecommunications Day Supplement* (Dhaka), May 17, 2002, 23.

[22]Bangladesh Telegraph & Telephone Board, "Homepage of the Bangladesh Telegraph & Telephone Board," http://www.bttb.net/index.html (September 20, 2003), 3.

[23]"Bangladesh Joins the SEA-ME-WE4," *The Daily Star* (Dhaka), April 25, 2002, 16.

[24]Mustak Hossain, "Mobile Telephony: PBTL to Expand Network, *Daily Star World Telecommunications Day Supplement* (Dhaka), May 17, 2002, 22.

[25]Hoque, "ICT for Bridging Digital Divide—Bangladesh Perspective," 23.

[26]"Grameen Fiber Optic Network: Pipeline of Possibilities," *eBiz Magazine*, March 7, 2003, 24.

[27]Farhana Mili, "Information Super Highway & IT Bazaar: The Position of Bangladesh," *Daily Janakantha Periodical*, September 7, 2001, 16.

[28]"Broadband Wireless Network Introduced," *The Daily Star* (Dhaka), February 1, 2002, 8.

[29]Hasan, "Prospects of IT in Bangladesh," 121.

[30]Bangladesh Computer Samity & The Asia Foundation, *Blue Line Survey on IT Sector of Bangladesh* (Dhaka: Bangladesh Computer Samity & Asia Foundation, 2002), 5.

[31]Sadik Hasan, "E-government: Is Bangladesh Ready?" *Social Science Review-The Dhaka University Studies, Part D* 20:1 (June 2003):181.

[32]Alam, "Electronic Government," 36.

[33]Hasan, "E-Government," 182.

[34]Mili, "Information Super Highway & IT Bazaar," 18.

[35]Hasan, "Prospects of IT in Bangladesh," 119-26.

[36]Hasan, "E-government," 182.

[37]Government of Bangladesh, "Official Homepage of the Government of Bangladesh," http://www.bangladeshgov.org/index.html (September 20, 2003), 2.

[38]Alam, "Electronic Government," 38.

[39]Bangladesh Election Commission, *Report on Election Activities: Parliament Election, 1991* (Dhaka: Government of Bangladesh, 1991), 2.

[40]Bangladesh Election Commission, *Statistical Report on 7th Jatiya Sangsad Election* (Dhaka: Government of Bangladesh, 1996), 4.

[41]Bangladesh National Party, "BNP as Government," http://www.bnpbd.-com/index/html (September 18, 2003), 2.

[42]Mili, *Information Super Highway & IT Bazaar*, 18.

[43]Lawrence Ziring, *Bangladesh: From Mujib to Ershad—An Interpretive Study* (Dhaka: The University Press Limited, 1994), 153.

[44]Mili, *Information Super Highway & IT Bazaar*, 18.

[45]Alam, "Electronic Government," 38.

[46]Hasan, "Prospects of IT in Bangladesh," 122.

[47]Ibid.

[48]"BNP Announces Election Manifesto: Law & Order, Corruption Top Priority," *The Daily Star* (Dhaka), September 8, 2001, 1.

[49]"Awami League Announces 21-pt. Election Manifesto: Accent on Poverty Alleviation," *The Daily Star* (Dhaka), September 10, 2001, 1.

[50]"Khaleda to the Nation," *The Daily Prothom Alo,* February 5, 2002, 1.

[51]UNDPEPA/ASPA, *Benchmarking E-government*, 28.

[52]Ibid.

[53]Hasan, "E-government," 181.

[54]Acting Secretary of the Ministry of Science and Information & Communication Technology, interview by author, tape recording, Dhaka, Bangladesh, April 10, 2003.

[55]"Proposed ICT Policy of IT Professionals," *Daily Jugantor*, February 5, 2002, 3.

[56]Kanak Sarwar, "Information Technology and Bangladesh," *Daily Janakantha Periodical*, April 22, 2002, 4.

[57]M. Zafar Iqbal, "Present IT Status of Bangladesh," *Bangladesh TechTransfer 2000*, April 28, 2000, 2.

[58]"Saifur to Tax Computers," *The Daily Star* (Dhaka), June 7, 2002, 1.

[59]"ISPs to Pay Extra Tariff," *The Daily Star* (Dhaka), February 1, 2001, 16.

[60]"Multi-metering System from July 1," *The Daily Star* (Dhaka), June 25, 2002, 16.

[61]"BSCN Project," *The Daily Star* (Dhaka), December 30, 2001, 16.

[62]"BTTB Dropped the BSCN Project," *The Daily Star* (Dhaka), April 25, 2002, 1.

[63]Hasan, "E-government," 182.

[64]Alam, "Electronic Government," 40.

[65]Bangladesh Computer Samity & The Asia Foundation, *Base Line Survey on IT Sector of Bangladesh,* 5.

[66]Alam, "Electronic Government," 40.

[67]Secretary of Ministry of Science and Information & Communication Technology, interview by Pratap Saha, *eBiz Magazine*, March 19, 2003, 38.

[68]Hasan, "E-government," 182.

[69]Hasan, "Prospects of IT in Bangladesh," 122.

[70]Alam, "Electronic Government," 40.

[71]Atiur Rahman and Taifur Rahman, "Cyber Connectivity: Are We Moving in the Right Direction?" *The Daily Star* (Dhaka) *11th Anniversary Supplement 2002*, February 13, 2002, 27.

[72]"No ITC Policy Yet," *The Daily Star* (Dhaka), May 15, 2002, 16.

[73]UNDPEPA/ASPA, *Benchmarking E-government*, 2.

[74]Deputy General Manager (Public Relations) of Bangladesh Railway, interview by author, tape recording, Dhaka, Bangladesh, April 13, 2003.

[75]Bangladesh Center for Advanced Studies & The World Bank, *Bangladesh 2020: A Long-run Perspective Study* (Dhaka: The University Press Limited, 1999), 97.

[76]Bangladesh Bureau of Statistics, *Statistical Pocketbook of Bangladesh 2000* (Dhaka: Government of Bangladesh, 2002), 222.

[77]UNPEPA/ASPA, *Benchmarking E-government*, 33.