



Internship Report
on
Feasibility Study Of IT Industry in
Bangladesh

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East West University



June 12, 2001



June 12, 2001

To
The Chairperson
Department of Business Administration
East West University
45, Mohakhali, Dhaka:1212
Bangladesh

Sub: Internship Report

Dear Sir,

This is to inform you that I was assigned to submit an internship report as a prerequisite of graduation from BBA in MIS. The report is on " Feasibility of Establishing IT Industry in Bangladesh.

The findings are based on primary data collected from in-depth observation and personal interviews of IT professionals, Teachers, Teacher of Computer Science, Other's. I tried to illustrate the background of the organization and the operations, mission & objectives etc.

In the project part I have included my observations over Current IT policy, Infrastructure, Government. action policy , Data analysis. Based on this I have covered: Findings, Analysis, and some initiatives to provide a real picture,real scenario of coming future.. I have thoroughly enjoyed working in this interesting topic and shall be available for any further clarification you may require.

Yours faithfully,

A handwritten signature in black ink, appearing to read 'E. Kabir', written over a faint circular stamp.

Ehtashum Kabir Chowdhury

1996-3-12-001



Acknowledgement

I could not have completed this report-work without the help of a number of people & authorities. Although space limitation constraints me to put everyone's name here. I shall at least put in the names of those without whose help this report would never been completed.

First, I cordially thank Mr. Kazi Khaled Shams Chisty Assistant Professor & Counselor of Career Services of East West University for arranging the internship opportunity. Next thank goes to my internship instructor Mr. Sadrul Huda from Business Administration department of East West University who advised me and guided me in my work, and was always very helpful & kind. Next I thank S.I. Nusrat Ahmed Chowdhury Associate Professor & Chairperson, Department of Business Administration, East West University, for his advises and kind cooperation without their guidance and contributions I could not have made this report successful.

Very special thanks to P.M. Shaha Country Manager of Indosoft System Bd. Limited for allowing me the opportunity to do internship in their organization. Special thanks Dr. H. B. M. Iqbal (Chairman) Indosoft system Bd. Limited for his kind cooperation. Mr. Tareq of BCC (Bangladesh Computer Council) also contributed a lot of information collection.

I gratefully acknowledge the help and support from my teachers and advisors from East West University to complete the 40 courses. In addition, many other people have immense contribution in my work of this project. I am sincerely thankful to all of them.



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Executive Summary

This report based on a 12-week internship program at Indosoft Systems BD Ltd. The report is divided into two parts- the organization part and the project part. The organization part discusses the mission, purpose, the organization structure and basic business activities of Indosoft Systems BD Ltd..

Indosoft Systems BD Ltd. started their business in 1999. They carry out on the business of manufacturers dealers and distributors of computer software programs, offer computer software consultancies, development of software, to carry out systems analysis and feasibility studies, to set up a Data Processing, Centre and carry out on business of data analyzing and to render professional and other services connected with the activities of computer and software development centre and to provide consultancy services in respect of information processing technologies, recruitment and training of manpower ,data preparation and processing , Management information and consultancy service any where .

One of the strongest sides of Indosoft Systems BD Ltd. is its customized Software (Like Banking software., Hospital management Software, finger print detection software etc. Almost each unit of this company operated so well that it turned out to be a big hit. This profit maximizing company also capturing most of the leading market share and generating revenues from its several divisions. Like other companies Indosoft Systems BD Ltd. also have several strengths, weaknesses, opportunities and some threats. After SWOT analysis it is clear that Indosoft Systems BD Ltd. should concentrate more on its current situation and always try to keep up the service quality.

Organization Part



ORGANIZATION PART

1. INTRODUCTION :

1.1 BACKGROUND OF THE REPORT:

This report is the result of a 12-week internship program on Indosoft Systems (BD) Ltd. an international software company, a subsidiary of Indosoft Systems Pvt. Ltd. India. Indosoft Systems (BD) Ltd. Started their business January 2000. But the mother company in India was incorporate din October 1999.. Main competitors are Ananda IT, Beximco Computers, Daffodil IT, IIT (Infinity Institute of Technology) etc. One of the strongest sides of Indosoft Systems (BD) Ltd. Is its banking and hospital management software. To fulfill the requirement of the internship program, this report is divided into two parts: (1) the Organization part & (2) the project part. The project part was assigned to me by the university.

1.2 SCOPE:

This reports deals with the IT & Software services in Bangladesh that was provided by the Indosoft Systems (BD) Ltd. The primary emphasis was given to thereBanking and Hospital Management Software, Fingerprint detection software & E-commerce. Methodology Both primary and secondary sources of data were used in this report. For organization part, information was collected through interviews with company personnel and also from company booklets, brochures, and memorandum of articles, articles of association, annual reports, major publications, newsletters, journals etc.

2. THE ORGANIZATION:

2.1 An Overview of Indosoft Systems (BD) Ltd. Indosoft Systems (BD) Ltd. is an international software company, which is a subsidiary of Indosoft Systems Pvt. Ltd. based in Mumbai, India. Indosoft Systems (BD) Ltd. was awarded license to operate IT & Software service provider in Bangladesh on January 2000.



2.2 COMPANY VISION:

Bringing the Information to the people.

2.3 COMPANY OPERATIONS:

The Purpose Indosoft Systems (BD) Ltd. has dual purpose: to receive an economic return on its investments and to contribute to the economic development of Bangladesh where Information Technology and Software Development can play a critical role.

2.4 COMPANY MISSION:

Indosoft's mission is to leverage its leadership as an innovative, efficient and cost effective solution developer for business enterprises in various industries. Development has no value if the advantages of technology cannot be borne by the common man and Indosoft Systems is striving hard to see that the same is achieved within a time frame.

2.5 OUR BUSINESS THEME :

- Long term business association
- Quality service
- To earn customer's respect, loyalty and profits

2.6 ACHEIVEMENTS:

ISPL has entered into an agreement for with Bangladesh Computer Council, Dhaka, to be the technology provide the various projects that the GOVT. OF BANGLADESH will undertake in various sectors of economy. ISPL has also been selected as IT resource consultant by companies like GTE & GE International in USA. ISPL has developed a complete banking software on AS400 & Multi platform environment , B2B E-commerce solutions, WAP & portals. ISPL has developed products using WAP technology i.e. Mobile, E mail, internet browsing.

2.7 OUR PEOPLE:



The biggest value adding factor and principle resource is our employees. Indosoft draws its strength from its team of young, talented, highly qualified professionals. We offer an environment where our professionals feel proud and excited to be part of

winning team. Employees are continually presented with opportunities to use and expand their diverse skill set and stay up to date with the latest technologies.

Customers are another important source of strength for Indosoft. We do not consider ourselves a consulting partner of its client instead it works as an extension of the client while catering to their specific requirements. cater the needs of our clients immediately. Delivery of the projects on schedule and quality consistency are the integral parts of our services.

2.8 OUR RESOURCES:

Indosoft Systems have VSAT for high speed access to the internet. Their software development lab is equipped with most sophisticated design tools and testing software. The hardware platform comprises of 2 Win NT Server, 1 SCO Unix Server and 1 Oracle Application Server. We have 32 workstation , 23 professional , including 14 programmers.

2.9 COMPANY MAIN SERVICES:

2.9.1 SOFTWARE DEVELOPMENT

Indosoft offers a broad range of software development services including planning, development , implementation and maintenance which can be customized to meet your needs. Its experience with various projects on a variety of platforms enables to achieve schedule and cost goals, improve the quality of systems and meet customer's needs. Indosoft pride itself in implementing and staffing critical projects and our project management techniques have allowed us to provide efficient and cost effective solutions in its truest sense.

2.10 AREAS OF DEVELOPMENT:

Components / Applications Development

Device Driver Development



Embedded / Mobile Application Development

Application Migration Services from other

Platforms

Host Connectivity Applications over Networks

/ other Interfaces

Development of Fault Tolerant and Redundant System Resource Optimization

Performance Benchmarking & Tuning

Web Enabling of Embedded systems

Solutions for the process Control, Real-time Systems

Design and Development of Simulators

2.10.1 PRODUCT:

e-mail Client for Mobile Devices

Internet Browsing on Mobile Devices

2. WEB TECHNOLOGY At Indosoft, we understand the Net technology. Our team of technologists and strategists do not only understand the Internet technology and their application to the business functions but also understand the greater implication of it to your business growth. The greatness of any intranet does not lie in the sophistication of its design or the level of automation it achieves but in the effective way it helps people communicate. The implementation team at Indosoft for Corporate Intranet/Extranet is a group of highly qualified professionals from the industry. The development team at Indosoft have developed and deployed some of the most useful business processes applications for corporate.



2.10.2 APPLICATIONS:

Secure Messaging / Communication
implementations – Internal / External

E-Mail.

Workflow Applications.

E-Business solution

Security solutions built using Firewalls.

Secure Transaction based solutions for E-Commerce on the Internet.

Implementing software solutions on the
Internet for automating business processes.

2.10.3 OPERATING SYSTEMS:

Various flavors of Unix like HP –UX, SGI IRIX, Sun Solaris, AiX, VMS, OSF
Novell NetWare 4.11 or 5.0 or 3.12 ,NT 4.0

2.10.4 SKILL-SETS

- CGI Programming using Perl, Java, JavaScript,
- Cold Fusion, PHP/FI, C, ASP.
- Stand-alone application development using
- Java, Perl, C, C++.

2.10.5 SERVER ENVIRONMENTS:

- Lotus Domino
- MS Exchange
- Netscape Suite Spot
- Send mail



2.10.6 DATABASES:

- ORACLE,
- Sybase,
- Informix,
- Ingress,
- Access, etc...
- Freeware databases like: MySQL,
- Postgress.
- Languages:
- Java,
- JavaScript (client-side and server-side),
- Active Server Pages (ASP),
- PERL,
- C and C++.

3. CONSULTANCY SERVICES:

Indosoft takes on the biggest Information Technology challenges and design cutting-edge software solutions, capable of supporting the demanding business needs of the present and the future software development and consulting which are highly specialized and client sensitive areas. Indosoft are technology experts and track the trends to help their customer to succeed by implementing the right solution at the right time. Experienced developer, analysts, and project managers with various levels of expertise are available to enable you to quickly staff critical projects for specific amounts of time. Indosoft also specialize in helping you identify and migrate project risk.

4. GLOBAL STAFFING:

The fast pace of changing technology in the IT industry excruciates constant demands on both IT and non IT companies. Indosoft systems provides skilled and competent software IT professionals who can take on from any phase of the project life cycle and all levels of programming and systems implementations. Human Resources skills offered by Indosoft Systems covers:-

- · LEGACY SYSTEMS ·



- · NEW MEDIA/GRAPHICS ·
- · ORACLE DBA / RDMS ·
- · AS/400 / UNIX Administrations ·
- · C,C++,VISUAL C++,COBOL,CICS,DB2,Y2K ·
- · VISUAL BASIC with SQL server 7.0 ·
- · WINDOWS DEVELOPER ·
- · ERP ·
- · E-COM/INTERNET ·
- · NETWORKING/TELECOM ·
- · HARDWARE/ELECTRICAL ENGINEER ·
- · FACULTIES ·
- · ENTRY LEVEL

4.1 TRAINING:

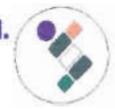
In this area, Indosoft Systems design and impart customized and tailor made training in

- AS/400
- ERP
- E-COMMERCE
- MICROSOFT CERTIFICATION

The training program includes in company thought workshops, updates for the senior management, training on process methodology and hands on skills development on a number of software platforms.

5. OUR CLIENTS:

- Origin
- Alltel Systems
- BellSouth
- GTE
- Information Technologies, Inc.
- Metlife
- Strategic Business Concepts
- Bangladesh Computer Council, Dhaka



Soft N Site [SA]
GE International
McDermott S.A.
J & P, Athens
Premier Bank ,Dhaka

6. HEAD OFFICES:

MUMBAI (INDIA) (Home country main office)
Address Krishna Kunj, Near JVPD Bus Stop
Bhaktivedanta Swami Marg, Juhu
Mumbai 400049
India

7. REGIONAL OFFICES:

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Address Suite # 205, Koger Center,
Cornell Building,
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42, Kemal Ataturk Avenue
Banani Model Town
Banani, Dhaka, 1213



Bangladesh

Project Part



PROJECT PART

1. INTRODUCTION

This report is the result of a 12-week internship program on Indosoft Systems (BD) Ltd. an international software company, a subsidiary of Indosoft Systems Pvt. Ltd. India. Indosoft Systems (BD) Ltd. Started their business January 2000. But the mother company in India was incorporate din October 1999.. Main competitors are Ananda IT, Beximco Computers, Daffodil IT, IIT (Infinity Institute of Technology) etc. One of the strongest sides of Indosoft Systems (BD) Ltd. Is its banking and hospital management software. To fulfill the requirement of the internship program, this report is divided into two parts: (1) the Organization part & (2) the project part. The project part was assigned to me by the university

1.1 PURPOSE

The prime objective of the internship program is to provide prospective undergraduates with on the job exposure and an opportunity to apply theoretical knowledge so far received into real life situation and the objective of the internship report is to meet the requirement for the degree of BBA.

Specific objectives of the Project part of this report are as follows:-

1. To have an overview of the current IT establishment
2. Feasibility of IT establishment of IT industry.
3. IT professional and educator statement
4. Information System and Automation

1.2 SCOPE

This reports deals with the IT & Software services in Bangladesh that was provided by the Indosoft Systems (BD) Ltd. The primary emphasis was given to there Banking and Hospital Management Software, Fingerprint detection software & E-commerce. Methodology Both primary and secondary sources of data were used in this report. For organization part, information was collected through interviews with company personnel and also from company booklets, brochures, and memorandum of articles, articles of association, annual reports, major publications, newsletters, journals etc.



1.3 METHODOLOGY: Both primary and secondary sources of data were used in this report. For organization part, information was collected through interviews with company personnel, IT professionals & IT educators. I had also visited Bangladesh Computer Council (BCC) and gathered information regarding various setup & establishments in the IT and Software development prospects in Bangladesh. Both primary and secondary sources of data were used in this report. For organization part, information was collected through interviews with company personnel and also from company booklets, brochures, major publications, newsletters, journals etc.

1.4 POPULATION: I had compiled data from primary sources and from direct observation in and out Indosoft Systems (BD) and I had also visited frequently other IT institutions and professional trainers and apt users while working with Indosoft and over the internship project. I went to collect views from a variety of people (university teachers, executives, top managers, hardware engineers, IT professionals & software engineers).

1.5 SAMPLE FRAME: For each of the survey questions there were fifty respondents who were randomly selected as representative sample.

1.6 LIMITATION I have tried all possible means to collect an organize information, Statistical data, peoples opinion but most cases sources of information and data was not much cooperative . Most of the time the interviewee was irritated and was reluctant to give data and opinion.



2 IT POLICY OF BANGLADESH

2.1 PREAMBLE

A. Information Technology (IT) encompasses the broad fields of data/information processing and communications by means of computer and telecommunications techniques and tools and used for organizational /personal information processing in all sectors of economy and society of a nation. This document presents the policy guidelines and recommendations for the development of the IT sector in Bangladesh.

B. IT is one of the most rapidly growing technologies in the world. The developed countries of the world have achieved a high degree of standard of living, primarily because of their ability to use IT as an effective tool for achieving national objectives. These countries have improved the standard of living of their people and the national economy through the cultivation and application of IT. On the other hand, the developing countries have fallen behind primarily because of their backwardness in this sector.

C. A dependable information system is essential for the management and operation of the public and private sectors for large volume of data transactions. There is a shortage of locally and externally generated information needed for efficient performance of these sectors. In order to meet this objective, IT use in every sphere shall have to be accelerated in terms of information generation, utilization and applications.

D. The document discusses the key issues of IT use and application in government, education and economy. Issues like IT-based income generation, better public and private service provision, exports, fiscal and non-fiscal incentives, IT infrastructure development, human resource development, standards, cyber law, protection of privacy and data security have been given equal importance.

E. The limitation of resources, shortage of skilled manpower, inadequate research facilities and skill development programs, lack of coordination among research



organizations, outmoded course curricula of science and technology education and poor social consciousness of the role of IT in nation building are the major factors contributing to this situation. Over the last few years, many nations have tackled the threats and grabbed the opportunities afforded by IT within a policy framework, to lay down guidelines and proceeded with the formulation of a national IT strategy as a part of the overall national development plan.

2.2 VISION

To be a complete IT-driven nation comprising knowledge-based societies by the year 2010.

2.3 MISSION

Build up a countrywide info infrastructure to ensure access to information by every citizen to facilitate empowerment of people and enhance democratic values and norms for sustainable economic development. Use this info infrastructure for human resources development, state-governance, e-commerce, banking, public utility services and all sorts of on-line IT-enabled services.

2.4 OBJECTIVES

A. The need for an IT policy for the development of the IT sector within the framework of overall national development is now well recognized. To this end, creation of a firm foundation for an information infrastructure in the society that meets the basic information needs for the state governance and socio-economic activities is also recognized. Specifically, the IT policy has been framed to fulfil the following objectives:

B. Promote, facilitate and assist the use and application of IT in Bangladesh with a view to improving the quality of life of its people and acquire the necessary capability to meet the challenge of rapidly growing demands of the information age;

C. Create opportunity for all citizens, including the disadvantaged and those living in remote areas to have adequate access to Information Technology; Set up appropriate IT organizational and institutional structures with clearly defined functionality and



- P. Develop and improve IT infrastructure for rapid growth of IT in public and private sectors;
- Q. Establish National Information Technology Industry Institutes (NITII) to study, propose, prototype and develop necessary technologies required to offer various value added services;
- R. Encourage, promote, facilitate and assist in the establishment, development and expansion of IT services industry and make full use of all opportunities for technology transfer for producing modern informatics equipment and components;
- S. Identify software, data processing services (DPS) and IT-enabled services (ITES) as priority sectors and formulate steps for export of software, DPS, and ITES;
- T. Conduct and coordinate research and development activities on the adoption of IT for its successful application in the socio-economic development of the nation;
- U. Ensure Data security and protection through formulation and enforcement of necessary Cyber Laws.



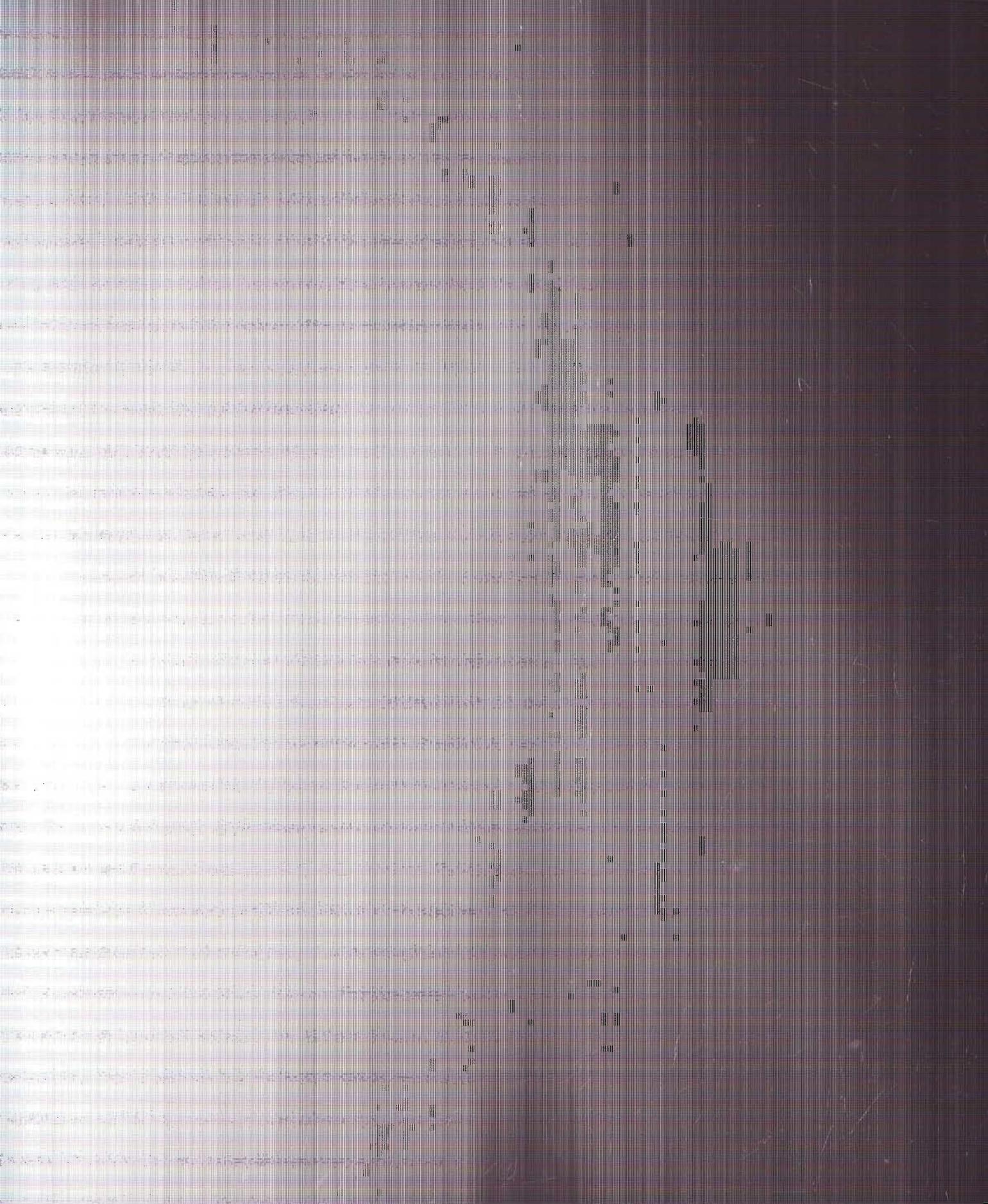
3. IT POLICY STATEMENTS AND RECOMMENDATIONS

3.1 HUMAN RESOURCES DEVELOPMENT

A. The Information age has raised the importance of IT skills both in the workplace and civil society. The computer literacy rate in Bangladesh is relatively poor due to insufficient facilities for IT education in the primary, secondary and higher levels of education. Lack of such skills on a national level will pose a barrier to Bangladesh competing effectively in the global economy. Therefore, any IT human resource development policy will encourage widespread IT literacy and an adequate supply of IT professionals to support economic goals.

B. Formal Training: There is an acute shortage of skilled manpower in the IT field worldwide. With the increased number of computer and peripherals used by public and private organizations, individuals, education and research institutions, there is a need for adequate number of trained man-power in various fields of IT such as software development, hardware maintenance, systems analysis, computer aided design/manufacturing, courseware design and development, network administration /management, network design, statistical analysis of databases, data communications, etc. The country needs to produce a large number of skilled IT manpower immediately to meet this challenge.

C. Universities, Bangladesh Institute of Technologies, colleges and polytechnics both in the public and private sectors should be strengthened to produce IT graduates/personnel in four-year Computer Science/Engineering and three-year Computer Science courses. Postgraduate degree programs in IT related areas should be introduced in all major public and private Universities. Earmark two universities among the proposed S&T universities in the FFYP with higher allocation of resources to build strong focus on IT. A specialized institute for multimedia shall be established to produce skilled human resources to exploit the opportunity offered by the growing multimedia-market. Diploma and Trade courses in IT may be offered by both public and private institutes. The Directorate of Manpower which trains unemployed youth shall emphasize on IT skill training in its development program. The continual skill upgrading of existing





professionals working in public and private sectors shall be ensured by inservice training program to be conducted by specialized institutions.

D. The shortage of trained and qualified teachers and trainers is also a major problem. Due emphasis must also be given to produce instructors/trainers by conducting intensive post graduate diploma courses at specialized IT teacher training institutes. IT literacy shall be made a mandatory requirement in the recruitment and selection of teachers. Arrange training and retraining periodically to keep them up-to-date with the technological progress in the area of IT.

As it would be difficult to train teachers in IT in large number using the present infrastructure, deploy virtual IT teachers wherever possible. CD based courseware development and use shall be encouraged to promote computer based education at all level of education.

E. The exposure to IT of students at an early age will build strong foundation and confidence to enter into IT profession. The computer study is not yet introduced in the primary level although it has been introduced in the SSC as optional subject and at the HSC level as fourth subject. There shall be widespread introduction of IT education in public and private schools.

F. Government support should be extended for introduction of computer courses, for training of teachers for schools and colleges and for providing proper laboratory and computer facilities in these institutions.

G. To address the issue of deficiency in English and mathematics education, crash programs shall be taken to train teachers. To ensure standard and quality of IT education, a national certification/examination system shall be developed and implemented immediately. Those who qualify under this system shall get recognition at the national level for employment.

H. Software industry is one of the essential components of IT industry with a huge global market. It is still largely dependent on human resources and many developing



countries are taking advantage of this opportunity. Bangladesh should strive to enter in the world software export market, and for this, needs to develop ISO standard professional software development and data entry services trained manpower.

I. In addition to this, teachers and researchers on IT, experts on preparing manuals, maintenance and repair of computer equipment, system engineers for installation and maintenance of software systems, engineers in networks of computer and communications, experts on economical analysis on information systems and experts in managing information projects will be required.

J. The use of IT as a teaching tool and for delivery of distance learning can help stretch our limited teaching resources and provide a high quality education to all.

3.2 IT INFRASTRUCTURE

A. 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. IT is a tremendously fast growing technology (industry) and many developed countries already reached to a commendable position in IT. Even, recently a large number of developing nations made unprecedented progress in this sector. To catch the technological capability and the level of expertise of these countries in IT and attain a sustainable growth of IT sector of Bangladesh and to compete in the expanding global IT market, a separate IT ministry is to be immediately established in Bangladesh.

B. In order to enter into the global highways of data communication and global IT market, the country needs nation-wide telecommunication coverage for both broadcasting and communications and a national Internet backbone which would ensure universal public access through public institutions such as libraries, schools and community centers. Private initiatives and competition is the only way to generate the high investment required and adequately assess the best technological solutions. The role of the Government should be to create a regulatory environment that facilitates the rapid growth



of all networks, promoting interoperability, data security and protection of intellectual property rights.

C. The government has already approved The National Telecommunication Policy, 1998. Development of local technological capabilities gained through a local IT industry, preferably with state support, should be emphasized and growth rate in IT spending of minimum 25% per annum must be targeted. The service component of the IT industry should be conducted by local private firms, possibly in association with foreign firms. In fact, the knowledge transfer that comes with foreign firms is extremely important and may help create a world-class industry and IT professional services sector. The World Trade Organization (WTO) aims to eliminate tariffs on IT products by the year 2000 for Organization for Economic Cooperation and Development (OECD) countries and 2005 for the other signatories which means a policy of tariff reductions and supply-side support measures must be followed. This approach is very suitable to IT because the major benefits from IT lie in its application and not in its production.

D. It is a fact that diffusion of Information Technology in developing countries is being severely restricted because of poor telecom infrastructure. Although, we are now connected with Internet through a number of ISP's, there should not be a public sector monopoly for providing access to the Internet to the general public. Interconnection between private sector providers of email services should be permitted. At the same time, data traffic of pornographic, subversive and matters prejudicial to state principles via Internet should be regulated by the Law of the Land.

E. The whole of Bangladesh should be brought under telecommunication networks at the shortest possible time and all existing telecommunication channels using analog switching should be converted to digital systems by the Bangladesh Telephone and Telegraph Board (BTTB) and whole of Bangladesh should be brought under PSTN by the shortest possible time. The BTTB should create facilities for low-cost high-speed data communication link with western countries and to set up ISDN/HDSN lines throughout the country. Especially it is required to introduce high bandwidth T1, E1, OCx, etc. lines and data transmission channels at 256 KBPS and above. Telecom sector should be privatized and deregulated as much as possible in phases. In particular, telecom facilities



should be extended to rural and remote regions based on usage patterns, perception of service quality, and perception of fairness of charges.

F. The high speed fiber optic communication channel of Bangladesh Railway should be used for setting up of a national data communication network for nationwide transmission of data. This will provide the infrastructure, services for all demands of data communication of the society. The national data communication network must provide high speed channels to all district headquarters for data transmission by point-to-point or multi-point linking, on-line data transmission to decentralized databases, linking local area networks to create a wide area network, organizing email networks and all kinds of information transmission such as voice, fax, data, image and texts, etc.

G. IT industrial areas in relatively high technology zone of the country shall be established through foreign technology transfer with the cooperation of foreign experts and expatriate Bangladeshis. Software Technology Parks (STPs) with satellite data communication facilities shall be established and software development/export companies should be encouraged to set up offices in those parks at preferential terms.

H. A central depository for collection and dissemination of IT information and research findings should be developed. This should be done under a network, connecting all universities, libraries and research organizations to this central depository, which in turn should be connected to the Internet.

3.3 RESEARCH AND DEVELOPMENT IN IT

A. The success and failure of information industry depend on the manpower expertise in software development and hardware adaptation. The strategy for research, training and development in the area of Information and Communication Technology (ICT) in Bangladesh is not adequate compared to other competitors in the region.

B. IT is a rapidly changing technology for which training, education, research and development is very much needed. Research and development in IT should focus on applied research, giving the potential to implement well the technology and knowledge



transfer, contributing to the improvement of quality and efficiency of the application of IT in our country.

C. The Executive Body, appointed by the National Council for Information Technology (NCIT) will coordinate IT related research activities carried out by the public and private sector key institutions. The NCIT shall act in a manner that facilitates flourishing the private sector initiatives for R&D activities for steady and fast growth of economy as targeted in the five-year Plan.

D. The Ministry of Information Technology will formulate plans to vigo-rate need-based R&D activities in Universities, BITs, Colleges, Polytechnics, and public & private sector R&D institutions and involve the younger generation in these activities. By providing assistance and preferential incentives, the MOIT should encourage setting up of IT research and development sections in various branches and localities, in the companies belonging to different economic sectors with investment from local or foreign joint-venture sources.

The industry may fund for R&D activities for new IT products and services through Industry-Academia collaboration. The Executive Body of NCIT shall act as the coordinating agency.

Set up a central on-line data bank for scientific and technological information, which can be accessed by educational institutes and other R&D organizations.

3.4 IT INDUSTRY

3.4.1 IT SOFTWARE INDUSTRY

For spearheading the IT revolution, Bangladesh must actively develop an IT industry. Since this industry is a new one in Bangladesh, it requires careful analysis and consideration to avoid possible risks and wastes. Utmost priority shall be given to the development of software industry and improvement of service skills.

A. A national software development plan (NSDP) shall be formulated to develop domestic software market and minimize dependencies on foreign made software;



B. An export target of 1 (one) billion US dollar shall be set for the next 3-year period. The target shall be revised periodically to match the growth of the market.

C. All custom software development and package adaptation should be performed locally while imports of systems software and packaged application software, dominated by a small number of internationally standard and interoperable products, may be allowed for imports. After the local software industry reaches a certain stage of maturity, through a process of experience accumulation and development, it will be able to reach the export market.

D. Research and development institutes, institutions of informatics in the universities and private IT companies in the country shall be encouraged to develop software applications by favorable and preferential conditions such as immunity from taxation or priority low rates for software products, protection of intellectual property of software products, assist with exports, encouragement and financing of training and sending staff abroad to take part in international seminars and exhibitions.

E. The government shall extend start-up financial support to encourage and assist the establishment of centers in public and private sectors for software promotion. Expatriate Bangladeshi experts shall be imbued to return to cooperate and assist in setting up of software development centers and encouraged by incentives such as equity participation by state, stock contributions, subsidies and preferential credits, procurement of partners in joint ventures, etc.

F. Associations of software companies and developers should be encouraged to exchange ideas, experiences and organize collective operations such as seminars, training, taking part in transaction and trading delegations, familiarizing oneself with contracts and rules in the exchange on commercial software, etc.

G. There is a bright prospect of export of software, data processing services and IT-enabled services from Bangladesh. Efforts for software export from Bangladesh should be made with particular emphasis on fiscal incentives, human resource development,



development of infrastructure facilities, market exploration and promotion. A task force may be created for software export and the Ministry of Commerce should be entrusted to implement the recommendations. The Export Promotion Bureau (EPB) should take vigorous steps to identify and explore markets for export of software from Bangladesh, including promoting strategic partnership and outsourcing opportunities.

3.4.2 HARDWARE INDUSTRY

A. Hardware industry often requires a huge capital investment and entrepreneurs shall be encouraged to establish production facilities for IC components, PC motherboards, peripherals and accessories with joint venture cooperation and technology transfer agreements. Foreign owned and multinationals companies who will establish such production facilities in Bangladesh and employ our workforce shall be offered incentives as per the rules on foreign investment in the country. Since the local market is small, the hardware industry shall target the export market. Dependence on foreign materials should be reduced where possible by giving incentives to local companies and protecting them from unfavorable competition. Local institutions and R&D organizations shall also be encouraged for research, design, and manufacturing of specialized informatics equipment's.

B. The most defining features of computer hardware and communications equipment products are their large economies of scale and technological complexity. The lack of large local markets means that any industry development strategy must be based on export promotion. There shall be a review of technology licensing policies and the promotion of exports or Foreign Direct Investment (FDI) in IT services. Greater emphasis must be given to policies geared to acquiring foreign technology on favorable terms and building local technological capabilities through this interaction. Whether foreign technology is acquired through FDI or licensing, these deals must involve some commitment to the training of local personnel to avoid long term reliance on imported technology. IT multinationals may be induced to locate export-based production in Bangladesh. At the same time, local technological capabilities should include support for domestic R&D and human resource development.

C. Service Industries: Bangladesh, having the advantage of cheap labor, must endeavor for expansion and export of data entry services at home and abroad. This sector may



provide substantial short-term benefits since it does not require highly skilled professionals.

3.5 E-COMMERCE

The Internet, Intranets and Extranets provide links between the components of a business and its customers, suppliers, and other business partners – both at home and abroad. This has opened up the opportunity to the trade and commerce sector to engage in three basic categories of electronic commerce applications: business-to-business, business-to-customers, and internal business processes.

The Government should promote the use of electronic transactions and to create an environment in which these transactions will be completely secure.

Authentication of the identities of both buyer and seller or the involved parties in an electronic transaction is crucial to promote e-commerce within the country. A certification authority for issuance and management of digital certificates that are needed to secure electronic transactions has to be established.

Use of international credit cards like VISA, MasterCard etc. should be encouraged. At the same time development of legal framework to provide the guiding principles, rules and legislation for e-commerce should be put in place.

3.6 E-GOVERNANCE

A. In most countries, the Government is the largest user of computers and related technology with the objective of enhancing public service delivery through Information Technology. They are often expected to be model users of these technologies. Encouraging the diffusion of IT within public sector services is fundamental to supporting the social and developmental goals of the country. The application of IT within the public administration can improve efficiency, reduce the wastage of resources, enhance planning and raise the quality of services. However, the focus of most computing in public sector has been on supporting traditional administrative and functional transactions rather than that of effective delivery of service to the public.

B Governments should implement large-scale computer systems to assist in managing large volumes of transactions that occur in the public service each day. The experiences of most public sector organizations in implementing information technology-based



solutions have demonstrated the need for managerial, technical and operational IS/IT capabilities.

New opportunities for improving the operations of public sector entities and for delivering government services through electronic shall be examined and implemented accordingly.

C. Development of National Data Resource Center Network: It is necessary to establish as soon as possible a network of management information systems of different ministries, sectors and localities in accordance with a unified program. All Government ministries, important departments and all district headquarters must be networked to the National Data Resource Center in shortest possible time. The Center shall be a system of national databases having capacity to store and supply rapidly all necessary information on the economic, cultural and social situation of our country, as well as to provide other relevant information, such as on education, health, agriculture, industry, natural resources and data based on geographical remote-sensing, environment and ecology for state bodies having the responsibility in the respective areas. These information systems - after processing, integration and treatment shall provide the Government and different state management agencies with the set up of plans and projects of national development, supplying services of information to all activities of production, business, economic and cultural research.

D. Each ministry, divisions, government bodies shall create an IT cell, to be managed and run by well trained IT professionals to plan, coordinate and implement IT projects and services. Special compensation package shall be introduced to encourage IT professionals.

Make IT literacy a mandatory requirement for the recruitment and selection of officials and staffs in the government. IT-literacy shall also be given due importance in the ACR to ensure utilization of IT in the public services.

3.7 LEGAL ISSUES

A. The issue of information protection and guarantee of reliability and security is important. The lacks of intellectual property protection, data security and interoperability have negative impact on both the use of IT and the incentive to introduce IT products into the market.



B. 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 should be covered by appropriate penal codes.

C. Data security and interoperability should be ensured through actions such as setting of encryption standards and international agreements on interoperability.

3.8 SECURITY AND DEFENSE

A. National defense and security are the fields, which require the use of most modern achievements of science and technology. Use and applications of computers and IT in managing and developing defense capabilities at the present time is small and needs to be accelerated. The scope of IT application in these fields is very large ranging from general issues on management and technical improvement to profession-specific problems.

3.9 HEALTH CARE

The main focus in Healthcare shall be the use of IT and communication technologies to deliver new capabilities for hospitals and healthcare providers, specifically in the areas of electronic medical records and tele-medicine.

Electronic Medical Record system should aim to capture a patient's medical history and make it accessible to different doctors and specialists. The system can monitor medical records for all patients, and takes care of the billing, payment and creation of medical record folders.

Another significant introduction can be wireless online system for medical reporting and orders for nursing care plans, prescriptions, lab tests radiology examinations. The system would provide medical staffs at the nursing station greater mobility and convenience.

IT must be introduced to facilitate the booking of appointments and referrals across the healthcare management network of Bangladesh. General practitioners and polyclinic staff should be able to search on online directory of specialists and make outpatient bookings over the Internet.

3.10 SOCIAL WELFARE

To ensure the widest possible involvement of the mass people and communities in IT, benefits of computers and communication resources need to be provided at the village



levels. Such systems must be utilized for rural development activities, agricultural and horticulture extension for farmers, career guidance for youth, technology guidance for rural enterprises, micro level planning etc. Communities and user groups or beneficiaries would be actively encouraged to participate, in all such activities.

Public grievance redressal may be incorporated in the IT-based system to facilitate access to citizens through any of the kiosks, public facilitation centers or Government offices. It would be made email based and strengthened to facilitate monitoring and on-line responses. NGOs and non-government organizations would be encouraged to establish centers at the village level for providing hardware/software or other support services. At the same time the state would use both the formal and non-formal channels to disseminate information about the application, advantages to communities of the use of IT.

3.11 TRANSPORTATION

The state shall introduce an IT-based integrated transport management system involving Bangladesh Road Transport Authority (BRTA), Bangladesh Road Transport Corporation (BRTC), Bangladesh Railway and other concerned agencies. Linking up of current and future traffic monitoring system, processing data on traffic pattern and conditions, and delivering the information quickly to government agencies, public through traffic signs, pagers, mobile phones, broadcast media and the Internet shall be done. With the advent of such a system, it will be possible to know when the next train or bus will arrive and be warned of traffic congestion.

Commercial transport agencies can use the real-time information for dynamic route planning and the data accumulated can be used for future traffic planning which would be highly beneficial for fast growing cities like Dhaka.

IT should also be used to provide online booking and ticketing services. Bangladesh Railway, BRTC, and other related organizations may be brought under a network that would offer the booking and purchase of tickets over the Internet. Those buying tickets on the Internet should be able to get their seats allocated immediately and to make electronic payments securely and conveniently.

Software technology may be developed for road guidance through which large vehicle fleets will be able to plan their routes and respond to unforeseen circumstances. Advanced communications technologies such as the Internet, Global Positioning System and mobile networks, and electronic maps with text and image databases shall be used to enhance the



decision-making process. This advanced system should take orders, plan routes, dispatch vehicles and ensure optimum use of time, petrol, distance traveled and number of vehicles. If a vehicle breaks down, it can even adjust the fleet schedule and assign the job to another vehicle. Such system design should take into account for easy integration with existing and new transportation and logistics applications and should be tested for commercial operations.

3.12 TOURISM

Tourism is one of the fastest growing international industries that will continue to expand rapidly in the near future. It creates economic and employment opportunity. To harness the potential of the tourism industry in Bangladesh, Information Technology can act as an important catalyst. The recommendations are:

Make use of Information Technology to project tourists' attractions in Bangladesh.

Develop a reliable, comprehensive, on-line information system to satisfy the needs of the visitors for travel and accommodation to deliver instant and up-to-date information.

Strengthen partnership with both the local and foreign agencies relevant to tourism and encourage to introduce on-line reservation for travel and accommodation, booking and ticketing for arts and entertainment events and shopping.

3.13 ENVIRONMENT

The growing environmental problem has endangered the national communities including the human existence. In this era of wired world, the Information Technology can help build the capabilities to fight against the environmental degradation. The policy recommendations are:

Create awareness about environment among the common mass by deploying Information Technology in collecting and disseminating information on environmental problems and their causes.

Identify and build an information system for plants, animal, their habitats and other natural communities whose life has been endangered.

Develop computer network for quick information collection and distribution to and from all other agencies involved in the environment protection.

Deploy GIS and other IT-based systems for planning at the national level for conservation of nature while accommodating compatible land use to maintain the ecological balance.



Make use Information Technology to help solve the most pressing problems of environment in the metropolitan areas – toxic emissions from cars and industry. Encourage the concerned agency to deploy computer-based systems for checking and monitoring toxic emissions from motor vehicles.

3.14 REGIONAL AND INTERNATIONAL COOPERATION

The Ministry of Information Technology shall explore and execute sub-regional and international cooperation and collaborative agreements on IT with developed and developing countries and also with international agencies.

4. IMPLEMENTATION AND MONITORING

4.1 INSTITUTIONAL ARRANGEMENT FOR IMPLEMENTATION

A. The role of the National Council for Information Technology (NCIT) as the central coordinating agency assumes critical importance as the implementing body. The NCIT shall advise the Government on IT sector which would help realize the stated objectives and then assign the Ministry of Information Technology for carrying them to successful completion and ensure their high performance. The Bangladesh Computer Council (BCC) may act as the backbone of an executive body for implementing objectives enumerated in the policy. BCC may, from time to time, in respect of a specified matter or class of matters, by writing, delegate any of its power to a member, officer, committee or agent of the council.

B. The above mentioned executive body shall be constituted with at least twelve members drawn from the Ministry of Science & Technology, Ministry of Post & Telecommunication, Ministry of Education, Ministry of Commerce, and Ministry of Industries, Chambers of Commerce and eminent persons who have shown capacity, in matters connected with computer and Information Technology, economics, finance, education, engineering, science or technology. The Chairman of the NCIT shall appoint one of the members of the council to be the chairman of the executive body.

4.2 FUNDS AND RESOURCES

A. Special efforts should be made to ensure adequate resources for the effective implementation of IT policies.



B. All economic sectors should be encouraged to make their own investment in the application of IT in production, trade and services. Procurement and utilization of funds from national sources, both public and private, should be pursued. International development and donor agencies should be approached to provide funds to set up necessary infrastructure and development of human resources, conforming to the objectives of IT Policy.

C. A centralized fund for R&D in IT sector may be created. The NCIT may allocate funds to various IT organizations and public universities and distribute them through the Ministry of Information Technology which would monitor and evaluate the impact of such expenditure. The administration of the programs will, however, remain with the respective organization.



5 ACTION PLAN

5.1 . SHORT-TERM (FY 2001 - 2002)

- 5.1.1 Organizational Structure
- 5.1.2 Human Resource Development
- 5.1.3 Infrastructure Development
- 5.1.4 IT Industry
- 5.1.5 Legal
- 5.1.6 Independent Consultants
- 5.1.7 Non-Resident Bangladeshi(NRB)
- 5.1.8 Non-Government Organization(NGO)

5.2 MID-TERM (FY 2002 - 2005)

- 5.2.1 Organizational Structure
- 5.2.2 Human Resource Development
- 5.2.3 Infrastructure Development
- 5.2.4 IT Industry
- 5.2.5 Legal
- 5.2.6 Independent Consultants



5.1 SHORT-TERM (FY 2001-2002)

5.1.1 ORGANIZATIONAL STRUCTURE

A. Ministry of Information Technology (MOIT) will be created with the prime responsibility of assisting socio-cultural-economic development of Bangladesh through the use of Information Technology.

B. The Ministry, headed by a full Cabinet Minister, will have the following IT related functional responsibilities:

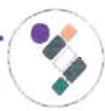
- i. Human Resource Development.
- ii. Telecommunication
- iii. Legislation
- iv. IT Industry

C. The Minister of Information Technology shall be appointed from amongst private sector professionals having proven track record of positive contributions in the field of Information Technology, as well as high standard of managerial capabilities and ethical standard.

D. National Council of Information Technology (NCIT) will be created as the field organization of MOIT to implement the decisions of the MOIT, as well as to act as the liaison between the IT Industry and the Government.

E. Export Promotion Bureau (EPB) will create an IT Cell, similar to the Textile Cell, to coordinate the activities of exports of IT products and services.

F. The compensation package of the technical staff appointed on Government payroll for all IT jobs will be in line with the local market.



5.1.2 HUMAN RESOURCE DEVELOPMENT

A. An Institute of Information Technology, in line with Institute of Business Administration, with collaboration from one of the renowned Universities of the United States of America (say, Stanford, Berkley, Carnegie-Mellon, Yale, MIT etc.) will be set up. This Institute will have the capacity to produce 1,000 IT Professionals in the first year of operation.

B. Capacity of IT related Departments of all existing Public Universities and Institutes will be increased so as to admit atleast 1,000 Students from the 2002-2003 academic session.

C. Shortages of IT teachers in the interim period will be made up by hiring appropriate faculty members from overseas. NRBs shall be preferred.

D. IT Related Distance Education Scheme of the Bangladesh Open University will be expanded through the use of TV and Internet. Private TV Channels should be encouraged to start IT Education Program.

E. Syllabus and Course Curricula of IT related program of all the Universities and Institutes shall be reviewed and revised every two years in consultation with the IT Industry and NCIT, to keep up with the latest development.

F. *All private IT Education and Training Institutions* will have to be accredited with NCIT which will devise standard testing and certification methods for these Institutes. Such methodologies shall be reviewed and revised every two year.

G All employees in Government Payroll shall undergo Computer Literacy Program, the result of which shall form part of the employees' Annual Confidential Report, and impact the career progression.

H. Nationalized Commercial Banks(NCB) will be required to sanction loans to students, teachers and educational institutions for purchase of Computers and Peripherals, at 5 %



simple rate of interest repayable in 36 equal installments.

I. NCBs will extend financial assistance to any individual undertaking appropriate IT education & training, at 5% simple rate of interest payable in 36 installments with a moratorium of one year after the completion of the course.

J. Local IT Education and Training Institutes will enjoy Tax Holiday for 5 years.

K. English Language is should be enriched for IT Education Program.

5.1.3 INFRASTRUCTURE DEVELOPMENT

A. Private Sector will be allowed to create Broadband Telecommunication Backbone within the country, as well as High Speed International Gateway.

B. BTTB will develop national access platform for more efficient Internet use.

C. Internet Exchange will be set up for national inter-connectivity amongst ISPs.

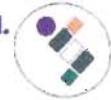
D. All Analog Telephone Exchange will be converted to Digital.

E. Internet Access cost will be brought down to Taka 0.20 per minute.

F. A Software Technology Center (STC) will be created immediately within Dhaka city in a rented building which will be fully equipped with internal Fiber Optic Cabling, High Speed Internet Gateway & all other necessary facilities. Local and NRB entrepreneurs may be able to rent the office space at a concessional rate, for development of Software and IT Services.

5.1.4 IT INDUSTRY

A. 1 % of the Gross Domestic Product will be spent every year on migration of manual work to computerization in Government, Semi-Government, Autonomous Bodies and



Sector Corporations.

B. Each Ministry will have a Budgetary Allocation for computerization of its activities each year.

C. Import of Foreign Applications Software, in areas where local expertise exist or can be developed, shall be discouraged.

D. Local Application Software will get a 15 % price preference over equivalent foreign products. The experience requirement will be relaxed for local Application Software and Developer.

E. Export Promotion Bureau (EPB) will set up Marketing Offices for helping the domestic IT Industry in entering into export market. Such Marketing Offices will be operated by IT Marketing Professionals from the private Sector, and be accountable for achieving quantifiable targets. Initially two such Offices will be set up; one in the U.S.A. and the other in the U.K.

F. EPB will support local IT industry for participation in regional and international Trade fairs.

G. Every Government Ministry will have its own interactive Web site before the end of June 2002.

H. Pilot projects in at least two Government procurements, including tender documents, tender submission, technical evaluation, financial offer, contract award etc. will be processed through the Web Sites. This will ensure transparency and accountability.

I. To encourage use of IT in the private sector 100% depreciation should be allowed (Hardware, Software etc.).

J. A financial evaluation of IT projects by the financial Institutions should be done considering the unique nature of the Industry. Human Resources, product & marketing



development expenditures for at least two years will be considered.

K. Employee stock option plan (ESOP) will be incorporated in the relevant taxation and company Laws with a view to retaining IT professionals in the country.

5.1.5 LEGAL

A. Relevant Rules and Regulations of Banking Acts will be amended to accommodate payment through Credit/Debit Cards, for both domestic and international E-Commerce.

B. Appropriate Cyber Laws will be enacted for all aspects of IT activities including protection of Data Security & Interoperability through Encryption and standards, as well as regulating undesirable text, data and image traffic.

C. Existing Labor and Manpower Laws and Regulations will not be applicable for IT professionals for overseas assignments.

5.1.6 INDEPENDENT CONSULTANTS

A. All individuals, firms and companies interested to offer consulting services for computerization, shall be encouraged to register with NCIT.

B. Independent Consultants must not have any financial relationship with any IT Vendor.

C. Appointment of foreign Consultants for GOB funded projects will be discouraged in cases where local expertise are available.

5.1.7. NON-RESIDENT BANGLADESHIS (NRB)

A. Non-Resident Bangladeshis (NRBs) will be encouraged to start IT related activities in Bangladesh.

5.1.8 NON-GOVERNMENT ORGANIZATIONS (NGO)



A. If any NGO intends to do business in IT field, that organization must register itself under Company Act, and comply with Taxation & other relevant Rules and Regulations as applicable to other business organizations.

5.2 MID-TERM (FY 2002-2005)

5.2.1 ORGANIZATIONAL STRUCTURE

A. As the volume of work increases, additional manpower and physical facilities will be provided to MOIT and NCIT.

B. MOIT, though a Government Ministry, will act as a World class professional IT organization.

5.2.2 HUMAN RESOURCE DEVELOPMEN

A. *The Institute of Information Technology* will be expanded and its capacity increased to produce 5,000 Graduates per year.

B. The capacity of IT related Departments of all Public Universities and Institutes will be increased, as shown below :

2003-2004 - 4,000 students per session

2004-2005 - 6,000 students per session

C. Foreign Faculty Members will be phased out by the year 2004-2005. However, some teachers will be retained for imparting knowledge only in the fields of new and emerging technologies.



D. Computer Literacy' Course will be made a compulsory subject for Higher Secondary Certificate Examination.

E. New recruitment in any Government, Semi-Government, Autonomous Bodies and Sector Corporations will be restricted to Computer Literate candidates only.

5.2.3 INFRASTRUCTURE DEVELOPMENT

A. Tele-density will be increased from the existing 5/1000 to 50/1000, in phases, with investment from both Public and Private Sectors.

B. All Schools, Colleges, Universities and other Educational Institutions will be connected to the Internet, free of charge, and students will have free access to the same.

C. Two Software Technology Villages (STV) will be created, one around Dhaka City and another in other suitable area of the country, with facilities such as Fiber Optic Communication Cabling, High Speed Internet Gateway, with all other modern facilities. Office space will be leased to the IT entrepreneurs at a concessional rent, for development of Software and IT Services.

D. Cyber Kiosks will be established in every villages to allow access to information by the citizens and to facilitate citizen-government interaction.

E. E-mail facilities will be introduced in all post offices throughout the country in order to provide e-post services to the people including the remote villagers.

5.2.4 IT INDUSTRY

A. All Government, Semi Government, Autonomous Bodies, Sector Corporations, Commercial Banks, Insurance Companies, Leasing Companies must switch over to computerized operation in replacement of manual system by 2005.

B. Use of Electronic Cash Register for sale of all items under VAT, will be made compulsory from July 2003.



C. Domestic IT Industry will have an Export Target of US \$ 2 (Two) Billions by June 2005.

D. EPB will open additional Marketing Offices in Germany, Japan and Australia.

E. Manufacturing facilities for Computer Hardware such as Key Board, Mother Board, Hard Disk Drive, Modem, I/O Cards etc. will be created within the country, preferably in collaboration with internationally renowned manufacturers.

5.2.5 LEGAL

A. Bangladesh will be represented in Unicode Consortium.

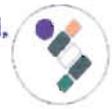
B. Unicode Standard 3.0, released in September 1999, classifies Bangla as an Indian Script. This will be corrected to show 'Bangla' as a Bangladesh Script.

C. National Standards for Unicode compliant Bangla Key Board and Font will be developed.

5.2.6 INDEPENDENT CONSULTANTS

A. Computerization of Government, Semi-Government, Autonomous Bodies and Sector Corporations will be arranged under the supervision of a number of Consultants, one each from another Government Department, NCIT and Independent Consultants.

B. Independent Consultants will form into a forum to exchange information and knowledge on a continuous basis.



6. Data Description

6.1 INTRODUCTION :

The success of any analysis ultimately depends on availability of the appropriate data. Now, we discuss the type of data and the process of data collection.

6.2 TYPES OF DATA :

In this research work, Our collected data is quantitative.

6.3 PROCESS OF DATA COLLECTION:

To reach our goal at first we had made a questionnaire, which is attached paper. On the basis of this questionnaire we collected a sample of size 50.



7. DATA ANALYSIS FROM PRIMARY DATA

7.1 Do you think that the number of computer users increasing in various sectors in our country?"

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	2	4.0	4.0	4.0
	Yes	48	96.0	96.0	100.0
	Total	50	100.0	100.0	
Total		50	100.0		

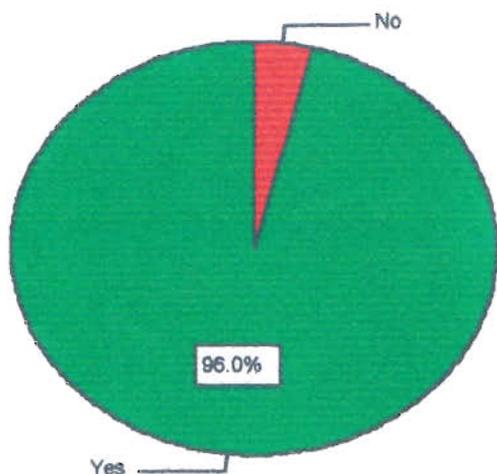


Fig1 : participants' reaction for question 7.1 [Pie-Chart]

For this question of the questionnaire
We obtain the frequency Distribution table and the Pie-Chart.

Comments: Here 96% respondent said that the number of computer user are increasing.



7.2 Do you think, we need increasing number of software in Bangladesh?

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid No	2	4.0	4.0	4.0
Yes	48	96.0	96.0	100.0
Total	50	100.0	100.0	
Total	50	100.0		

Do you think, we need increasing number of software in Bangladesh?

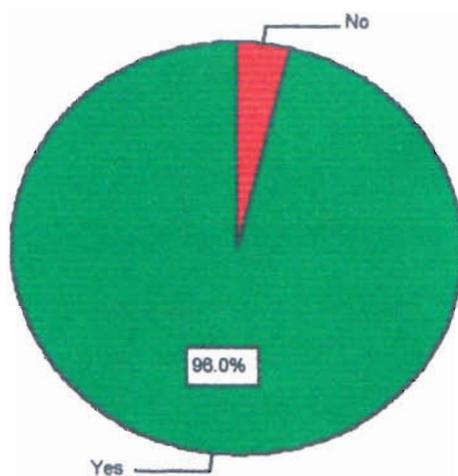


Fig 2: participants' reaction for question 7.2 [Pie-Chart]For this question of the questionnaire we obtain the frequency distribution table and the Pie-Chart.

Comments: Here 48 (96%) out of 50 respondent said that we need more software.

7.3 Do you think that utility of software will decrease?



		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	47	94.0	94.0	94.0
	yes	3	6.0	6.0	100.0
	Total	50	100.0	100.0	
Total		50	100.0		

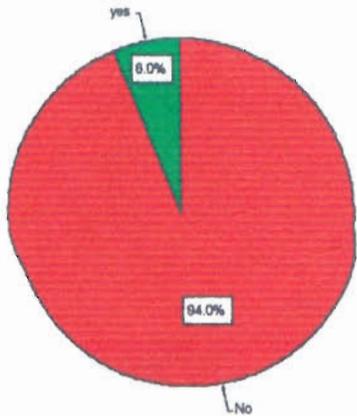


Fig 3 : participants' reaction for question 7.3 [Pie-Chart]

For this question of the questionnaire

We obtain the frequency distribution table and the Pie-Chart.

Comment: Here 94% of the respondent said that the utility of software will not decrease.



7.4 Is any program on software development process going on in our country?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No programe	4	8.0	8.0	8.0
	Few programe	21	42.0	42.0	50.0
	Many programe	25	50.0	50.0	100.0
	Total	50	100.0	100.0	
Total		50	100.0		

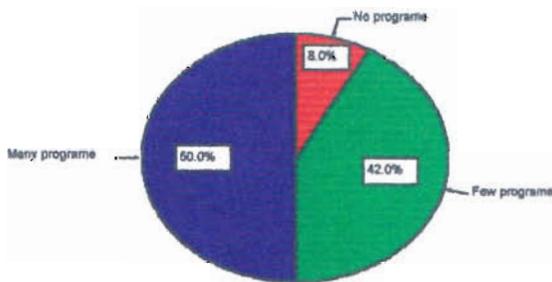


Fig 4: participants' reaction for question 7.1 [Pie-Chart]

For this question of the questionnaire We obtain the frequency distribution table and the Pie-Chart.

Comments: Here 50% respondent answered "Many program"
 42% respondent answered "Few program"
 and the rest of the respondent answered "No program".



7.5 Is there favorable environment prevailing for software development in our country?

	Frequency	Percent	Valid Percent	Cumulative Percent
No	12	24.0	24.0	24.0
Yes	38	76.0	76.0	100.0
Total	50	100.0	100.0	
Total	50	100.0		

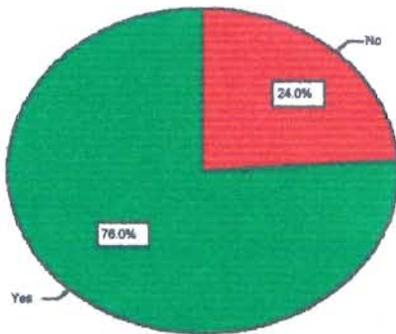


Fig 5: participants' reaction for question 7.5 [Pie-Chart]

For this question of the questionnaire we obtain the frequency distribution table and Pie –Chart.

Comments: Here 38 (76%) respondent answered that we have software development environment.



7.6 Suppose you are in need to develop software. Which of the following steps you will take?"

	Frequency	Percent	Valid Percent	Cumulative Percent
Will hire a software Developer	5	10.0	10.0	10.0
Will Develop by yourself	43	86.0	86.0	96.0
Other	2	4.0	4.0	100.0
Total	50	100.0	100.0	
Total	50	100.0		

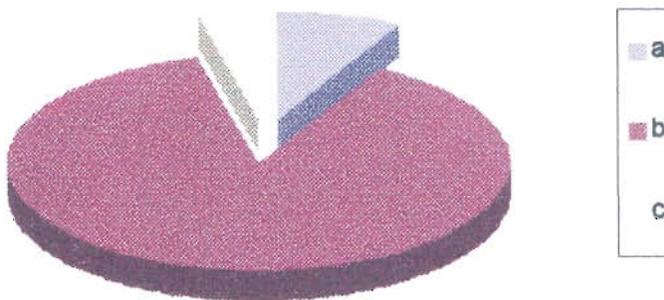


Fig 6: participants' reaction for question 7.6 [Pie-Chart]

Here a = will hire a software developer

b = will develop by yourself

c = others

For this question of the questionnaire, We obtain the frequency distribution table and Pie chart.

Comments: Here 43 (86%) respondent answered that they would First try themselves.



7.7 If a bug is detected in your software development process, what will you do?

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid				
Discard the software	4	8.0	8.0	8.0
Delete all the codes that you have written.	2	4.0	4.0	12.0
Don't delete codes but redesign the analysis and then update	42	84.0	84.0	96.0
Fix the bug as a disadvantage of the software.	2	4.0	4.0	100.0
Total	50	100.0	100.0	
Total	50	100.0		

Here a = Discard the software

b = Delete all the codes that you have written

c = Don't delete codes but redesign the analysis and then update codes

d = Fix the bug as a disadvantage of the software

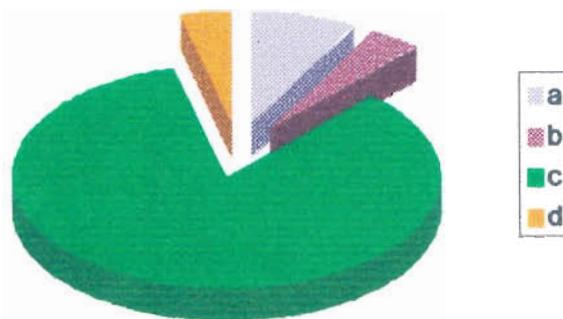


Fig 7: participants' reaction for question 7.7 [Pie-Chart]

For this question of the questionnaire we obtain the frequency distribution table and the Pie-Chart.

Comments: Here 50 respondents 42 respondent means 84% said that they will carry out new analysis without deleting the codes. This shows that the respondents have interest in software development. They wanted to do new analysis. But actually this is the job of software engineers. So the Cosstable-1



Has been created from which we can find the level of competence of the software engineers regarding software development.

7.8 How many software developers are there in our country?

	Numerou		Valid	Cumulativ
	Frequency	Percent	Percent	Percent
Many	2	4.0	4.0	16.0
Few	24	48.0	48.0	64.0
Insufficien	18	36.0	36.0	100.0
Total	50	100.0	100.0	
Total	50	100.0		

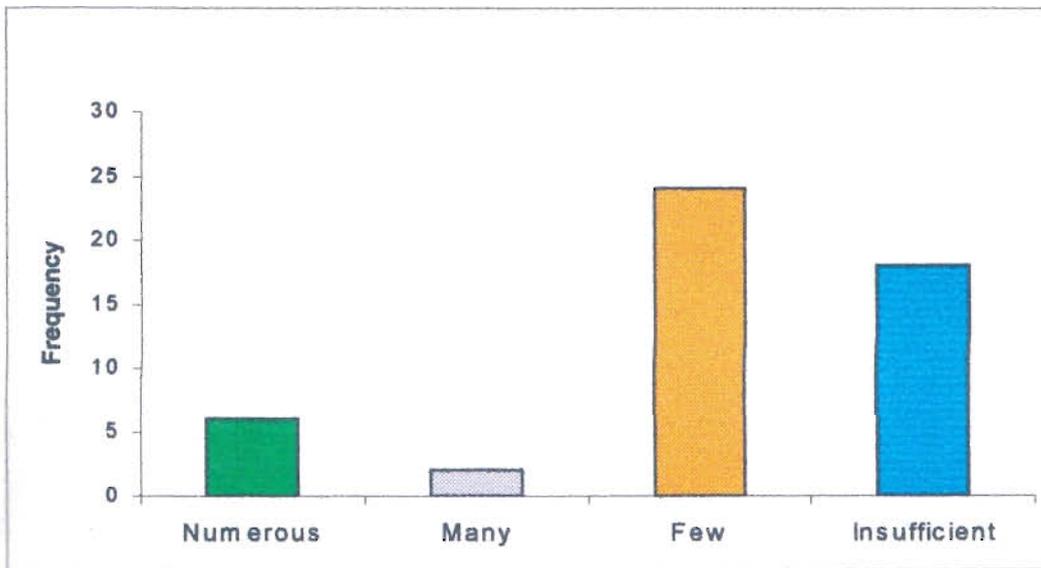


Fig 8: participants' reaction for question 7.8 [Histogram]

For this question of the questionnaire

We obtain the frequency distribution table and Histogram.

Comment: Here 48% respondent answered that software developer are small and 36% respondent answered that their number is insufficient.



7.9 How much reliable our local software engineers?"

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Not all reliable	2	4.0	4.0	4.0
Moderately reliable	4	8.0	8.0	12.0
Reliable	28	56.0	56.0	68.0
Highly reliable	16	32.0	32.0	100.0
Total	50	100.0	100.0	
Total	50	100.0		

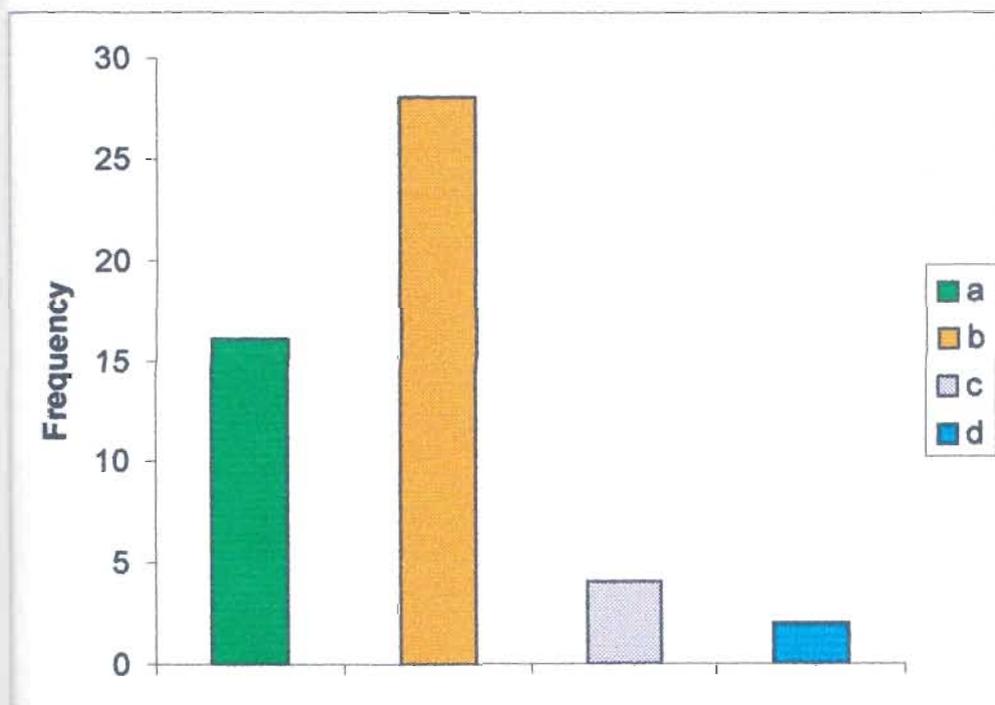


Fig 9: participants' reaction for question 7.9 [Histogram]

Here a = Highly reliable

b = Reliable

c = Moderately reliable

d = Not all reliable

For this question of the questionnaire We obtain the .9 frequency distribution table and the 9.1 Bar-diagram.



Comments : 56% respondent answered that they are reliable , 32% said that they are highly reliable, 8% respondent says moderately reliable and rest of the respondent said that they are not reliable.

So we can said that people in general have confidence upon our software engineer.



7.10 Do you think that government's approach towards software development activity is positive?

	Frequency	Percent	Valid Percent	Cumulative Percent
No	5	10.0	10.0	10.0
yes	45	90.0	90.0	100.0
Total	50	100.0	100.0	
Total	50	100.0		

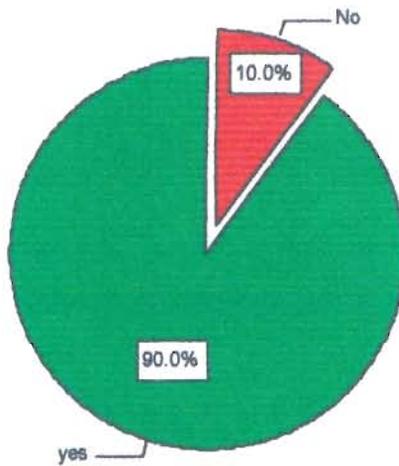


Fig 10: participants' reaction for question 7.10 [Pie-Chart]

For this question of the questionnaire
We obtain the frequency distribution table and Pie-Chart.

Comments: 90% respondents mentioned that Government have supported to this IT field.



7. 11. What is the possibility of exporting software?"

	Frequency	Percent	Percent	Cumulative Percent
Bright	31	62.0	62.0	62.0
Moderate	18	36.0	36.0	98.0
Impossible	1	2.0	2.0	100.0
Total	50	100.0	100.0	
Total	50	100.0		

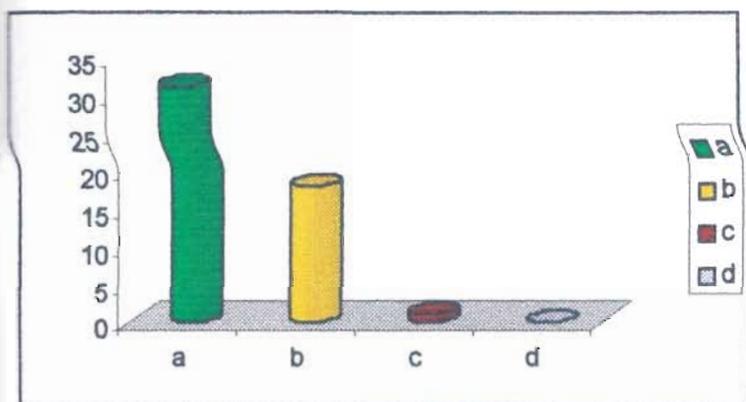


Fig 11: participants' reaction for question 7.11 [Histogram]

Here

- 'a' means 'Bright'
- 'b' means 'Moderate'
- 'c' means 'Impossible'
- 'd' means 'Others'

For this question of the questionnaire

We obtain the frequency distribution table and Bar-Diagram.

Comments: 62% respondents answered that the possibility is 'bright' , 36%b answered that there is 'moderate' possibility, and the rest of the respondent answered that there is no possibility.

7.12 Do you think it would be possible to establish software industry in our country?



	Frequency	Percent	Valid Percent	Cumulative Percent
No	1	2.0	2.0	2.0
yes	49	98.0	98.0	100.0
Total	50	100.0	100.0	
Total	50	100.0		

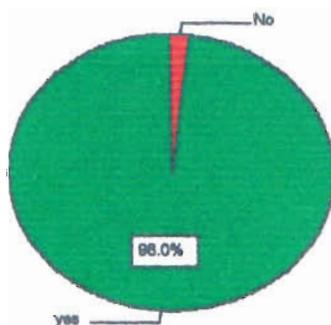


Fig 12: participants' reaction for question 7.12 [Histogram]

For this question of the questionnaire we obtain the frequency distribution table and Pie-Chart.

Comments: 49 (98%) respondents of 50 mentioned that it is possible to establish software industry in Bangladesh.



8. Comments for the cross table

8.1 Cross table for occupation (Software Eng.) the question, "If a bug is detected in your software development process, what will you do?"

	If a bug is detected in your software development process, what will you do?			
	Discard the software	Delete all the codes that you have written.	Don't delete codes but redesign the analysis and then update	Fix the bug as a disadvantage of the software.
Occupation			22 95.7%	1 4.3%

From Cross table 1 we can determine the confidence of public in general upon the software developers. Because 95.7% software engineer said that if a problem like a bug is detected in a software development process than they would not consider the situation as a disadvantage or will not stop the process. Rather they would analyze the whole thing from the start.

8.2 Cross table for occupation \$ the question, "Do you think That the utility of software will decrease?"

		Do you think that utility of software will decrease?		Total
		No	yes	
Occupation	Software Engineer	22 95.7%	1 4.3%	23 100.0%
	Hardware Engineer	11 100.0%		11 100.0%
	Teacher of the Computer Science	7 100.0%		7 100.0%
	Other	7 77.8%	2 22.2%	9 100.0%
Total		47 94.0%	3 6.0%	50 100.0%

From Cross table 2 we can see that 100% of the Hardware engineers and teachers of computer science have answered that the utility of software will not decrease.



8.3 Cross table for occupation the question, “How many software developers are there in our country?”

		How many software developers are there in our country?				Total
		Numerous	Many	Few	Insufficient	
Occupation	Software Engineer	2 8.7%		11 47.8%	10 43.5%	23 100.0%
	Hardware Engineer	2 18.2%	1 9.1%	4 36.4%	4 36.4%	11 100.0%
	Teacher of the Computer Science			4 57.1%	3 42.9%	7 100.0%
	Other	2 22.2%	1 11.1%	5 55.6%	1 11.1%	9 100.0%
Total		6 12.0%	2 4.0%	24 48.0%	18 36.0%	50 100.0%



From the results of Cross table 3 we can find that the number of software developers on our country is not sufficient. 47.8% of the software engineer respondents answered the number is 'few' said and 43.5% of them said the number is 'insufficient'. Among the Hardware engineers 36.4% have answered that the number is 'few' & 36.4% said the number is 'insufficient'. Finally the teachers of Computer Science and others said 57.1% for 'Few' & 55.6% for 'insufficient' respectively.

8.4 Cross table for the occupation & the question, "Do you think that government's approach towards software development activity is positive?"

Occupation	Do you think that government's approach towards software development activity is positive?		Total
	No	yes	
Software Engineer	2 8.7%	21 91.3%	23 100.0%
Hardware Engineer		11 100.0%	11 100.0%
Teacher of the Computer Science	1 14.3%	6 85.7%	7 100.0%
Other	2 22.2%	7 77.8%	9 100.0%
Total	5 10.0%	45 90.0%	50 100.0%

From the results of Cross table 4 we can find that the government of Bangladesh has a positive attitude because almost all the respondent has answered positive for this question.

8.5 Cross table for occupation & the question, "What is the possibility of exporting Software?"



		What is the possibility of exporting software?			Total
		Bright	Moderate	Impossible	
Occupation	Software Engineer	14 60.9%	9 39.1%		23 100.0%
	Hardware Engineer	7 63.6%	4 36.4%		11 100.0%
	Teacher of the Computer Science	6 85.7%	1 14.3%		7 100.0%
	Other	4 44.4%	4 44.4%	1 11.1%	9 100.0%
Total		31 62.0%	18 36.0%	1 2.0%	50 100.0%

From the results of Cross table 5 we can find that there is possibilities for exporting software from Bangladesh. Since 63.6% & 36.4% of the software engineer's has responded for 'Bright' & 'moderate' respectively for this question.

8.6 Cross table for the Occupation & the question, "Do you think it would be possible to establish software industry in our country?"

		Do you think it would be possible to establish software industry in our country?		Total
		No	yes	
Occupation	Software Engineer		23 100.0%	23 100.0%
	Hardware Engineer		11 100.0%	11 100.0%
	Teacher of the Computer Science		7 100.0%	7 100.0%
	Other	1 11.1%	8 88.9%	9 100.0%
Total		1 2.0%	49 98.0%	50 100.0%

From the results of Cross table 6 is like a constant. It is possible to establish software industry in to our country. Because 100% of the software engineers, hardware engineers



of computer science teachers and 88.9% of others related to software has expressed positive opinion in this regard.



9. ANALYSIS FROM SECONDARY DATA

9.1 PRESENT STATUS OF IT IN BANGLADESH

To determine the status of IT resources distribution in Bangladesh, 1836 IT organizations were studied in a recent survey. The activities were found to spread over varied dimensions, such as, office automation, desktop publishing, hardware software development and marketing, human resources development etc. The following are the findings :

Type of Organization	Percentage
Hardware/Software Marketing	10.9%
Data processing Services	6.2%
Human Resources Development	41.3%
Users (Govt. Offices, Banks, NGOs, Private and Personal Users)	26.3%
Others	15.2%

Source: Bangladesh Computer Council (BCC)

The distribution of country-wide IT personnel on functional basis is computed from the surveyed data as:

Teacher	16.4%
Database Management	13.9%
Systems Analyst	2.6%
Database Expert	4.6%
Network Expert	4.6%
Programmer	6.5%



Hardware Engineer	5.2%
DTP Operator	4.2%
Data Entry Operator	44.7%
Others	0.7%

Source: Bangladesh Computer Council (BCC)

The survey, thus, shows that about 50% of the IT people are working as computer operators of which 9% are involved in DTP and the rest in normal data entry/word processing operations.

9.1.1 IT IN THE FIFTH FIVE YEAR PLAN

The government put emphasis on IT in the Fifth five-year Plan. Matters like establishment of high capacity fiber-optic telecommunication back-bone to develop multimedia infrastructure, building Local Information Infrastructure (LII) and National Information Infrastructure (NII) to assist for all kinds of nation building activities through IT have been given priority. Connectivity of the LIIs and NIIs to the GII (Global Information Infrastructure) like the Internet for making a common platform for scientists and technologists in home and abroad for collaborative works has been emphasized. Use of Internet for education, health-care, electronic trade and commerce have also been reiterated. For widespread use of IT, the present government has already exempted tax, VAT and duties from the import of software, computer hardware and other relevant goods, resulting in a reduction of the price of these commodities. This historical step has made a significant impact on the promotion and development of this sector.

9.1.2 PRESENT STATUS OF IT EDUCATION AND TRAINING IN BANGLADESH

In the context of the world scenario of human resource strength, ours is relatively poor. At the university level all national public universities and in particular new universities have started producing computer science graduates through opening computer science departments. Steps have been taken to implement computer education in the secondary



and higher secondary levels. Since the last three years vigorous efforts have been made to improve the quality of IT education and research. The massive and strong participation by young people and their urge to become computer literate and develop professional competence are the most encouraging observation. The following table shows the number of seats for IT related subjects in various universities in Bangladesh.

University	No.	Students per year
Public University	7	297
Private University	12	795
National University	1	600
BIT	4	240
Total		1932

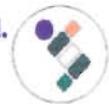
Source: Bangladesh Computer Council (BCC)

Bangladesh Computer Council (BCC) conducts short-duration professional efficiency enhancement training program in IT. BCC has started its standard IT training program in Rajshahi division. Other divisional head quarters are to follow next year. The Bangladesh Institute of Communication and Information Technology (BICIT) has been included in the Annual Development Program in 1999-2000 fiscal year. This institute will impart standard IT education, training, standardization and certification of IT related course curricula and products.

9.1.3 TELECOM INFRASTRUCTURE

Telephone Status: In December, 1999 Bangladesh T&T Board has 474322 telephone lines connected throughout Bangladesh, 61% of them being digital. BTTB is converting all of its Analogue Exchanges into Digital Exchanges and the target is to complete all these conversion by the year 2002.

Transmission Systems in Bangladesh: Bangladesh is a riverine country and BTTB's long route transmission systems are mainly composed of microwave, UHF and VHF radio links. The use of optical fiber is presently limited within some city areas for interconnecting local exchange and Remote Switching Units (RSU) in Multi Exchange



Network. All thana headquarters (the smallest administrative units) are connected with their respective districts through UHF links. Most of such UHF links are digital radio system. Some of the district headquarters are connected through digital UHF links.

The major backbone transmission links in Bangladesh are presently using star formation network structure. Expansion and rehabilitation programs have been taken up for laying of 12 core Optical Fiber Cable between Dhaka and Chittagong, which is the busiest route and still analogue.

Amongst the private Operators, Bangladesh Rural Telecom Authority (BRTA) have established a Microwave link between Dhaka and Sylhet. The most extensive transmission network is being established in the private sector by Grameen Phone, who are using the Fiber Optic Cable Network of Bangladesh Railway, available along the Railway route all over Bangladesh. Grameen Phone is also establishing a 140 Mbps Microwave link between Khulana and Chittagong via Barisal.

International Telecommunication Facilities: Bangladesh commissioned its first Standard A Satellite Earth Station in 1975 at Betbunia to work with INTELSAT system, The international telecommunication facilities became easier and versatile after installation of Standard B Satellite Station at Talibabad, The third Satellite Earth Station along with an International Trunk Exchange (ITX) was commissioned in 1994 at Mohakhali in Dhaka. Another direct Satellite link was commissioned between Sylhet and London in June 1995. BTTB's overseas transmission routes are mostly dependent on these 4 satellite earth stations working with INTELSAT Satellites in IOR. These stations are characterized as follows:

Beside these satellite links there is an overseas terrestrial microwave (analogue) route with India having 60 channels capacity to work between Dhaka and Calcutta.

Telecommunication Status in Bangladesh (December, 1999)

Number of Telephones	602,986
BTTB	474,322
Private Operators	128,664
Tele-density	5 per 1,000



Number of Cellular Telephones	98,500
Paging & Radio Trunking Subscribers	7,000
Telex Subscribers	1,600
Card Phones	1,381
Packet Switch Subscribers	60
International Voice Circuits	2,107
International Trunk Exchange	3
Total International Circuits	3,936
NWD Circuits	21,930
Switching	61%
Transmission	75%
VSAT	51
Computer Penetration	1 per 7,000
Internet Users	50,000
Satellite Earth Station	4

Source: Bangladesh Computer Council (BCC)

Privatization of Telecommunication Services: The telecommunication sector of Bangladesh has been liberalized for private investment except for International Voice Communication. All other forms of communications have private sector participation. Private Telecom Operators offer cellular mobile, paging and the radio trucking services as well as Internet services. Private operators are also given licenses for Basic Telephone Services in Rural Areas.



Internet Services: The Internet Service businesses in Bangladesh were being privately run until recently with VAST connectivity mostly with Hong Kong and Singapore. ISPs in Bangladesh connect to the global Internet via VSAT links. BTTB also started its Internet services a year back. There are now more than 30 ISPs in Bangladesh with about 50000 users.

9.1.4 IT INDUSTRY

The IT industry is represented by two industry bodies, namely Bangladesh Association of Software and Information Services (BASIS) and Bangladesh Computer Samity (BCS). BASIS, established in 1998, is a relatively new industry association whose membership stands at 53 today and is growing steadily. All major software development and data processing firms of the country are members of this body. BCS, on the other hand, was formed in 1987 and represents computer business firms, in general. Now its membership stands at more than 160. Many of the IT firms have membership to both of these associations. Major hardware and software manufacturers such as Acer, Compaq, Dell, Digital, HP, IBM, ICL-Fujitsu, Microsoft, Novell, Oracle, SCO, Sun Microsystems, Unisys and others are being represented for many years in Bangladesh.



10. FINDING'S

1. Computer users are increasing in various sectors in our country. This is clearly noticeable in major cities.
2. Availability of software & vendors are increasing.
3. Utility of software will never decreases. It will go up day by day.
4. Software development is going in our country.
5. We have insufficient software developer , so we need it to train more.
6. Our software developers are reliable.
7. Government have positive approach in IT sector.
8. Numbers of professional IT training centers are increasing.
9. Human resource development process is going fast in recent years.
10. IT infrastructure are development are necessary to establishing IT firms.
11. Components (Accessories) of computer are mostly tax free.
12. We have huge opportunity to export software .
13. If proper IT workforce can be prepared on time and we can create good will in world market.

14. The size of the IT industry is estimated at around USD 150 million, which is growing at, more than 20% each year. Among the major IT projects already done/undertaken in Bangladesh are:

- A. Preparing a national voter database of more than 70 million people and producing computerized ID cards for each voter under a project that started in 1995.
- B. Implementing the computerized nationwide seat reservation and ticketing system for Bangladesh Railway.
- C. Preparing and administering the motor vehicles and drivers' registration database.
- D. Establishing a National Data Bank, which is an on-going state-funded project, started in 1995; it will be the ultimate repository of all information of Bangladesh.



E. Supervisory Control And Data Acquisition (SCADA) systems. Many national utility bodies (power, gas, telephony etc.) implemented or are going to implement SCADA systems over their national grid networks.

F. There are two stock exchanges in the country, both of which have implemented automated securities trading systems in 1998. The Securities and Exchange Commission have undertaken the task of dematerializing securities and adopting an electronic central depository of securities within 1999.

G. The boards of secondary and higher secondary education process more than 30 million examination papers each year through automated OMR based computer system.

H. A project started in 1997 to produce a multimedia and hard copy versions of encyclopedias in Bangla with English translation.

I. The software and data-processing industry in Bangladesh has had a successful track record of exporting to the USA and Europe for more than a decade now. The areas of competency of the IT industry in Bangladesh are as follows:

- Web-page design and web-enable software development
- Multi-media design and publishing
- Alphanumeric data processing (from paper documents, scanned images and verbal recordings)
- Relational database applications development. Front-end tools used are Visual BASIC, Developer 2000, Power Builder, Access, FoxPro and others. Back-end systems used are Oracle, Informix, Sybase, DB2 and others.
- Device drivers for UNIX, Windows NT and Windows 95/2000.
- Y2K related database and program modification work.
- Euro-Money related database and program modification work.

(J) Human resources for the IT industry have been growing rapidly since the govt. declared this industry as a thrust sector and has embarked on a mission to make the industry a substantial part of the USD 36 billion economy. The vital statistics for this sector are:

- More than 300,000 IT personnel are engaged in the industry.



- Full exemption from income tax.
- Working capital loan from banks at preferential interest rates and with no collateral requirement.
- Absolutely duty and tax free import of computer hardware and software.

15. It is new venture that will go a long way to reduce unemployment in our country.

16. Bangladesh is fully feasible to setup IT industry.

RECOMMENDATION

Considering the overall responses of the respondents, It is obvious that there is bright future for the growth of software development & IT sector.

If the government, private entrepreneur and IT personal all come together with a vision for making creative, user friendly, state of art software's and create a awareness among the consumer than they can do better in the software business.

After the initial setup of infrastructure, training centers and more practice facilities are established we can provide better competent software personals & programmers who can give good quality, cheaper software solutions than others.

CONCLUSION

According to my study in IT sector I think it is the right time to Invest and established IT industry. During three months of internship at Indosoft systems Bd. Ltd. I have seen and learned a lot of facts and techniques of IT and implementation which would help me go a long way for carrier development in IT.

Appendix

Action Plan - Vision 2010

Three categories of Action Plan:

2. **short-term Plan - 2002**
3. **Medium-Term Plan - 2005**
4. **Long-Term Plan - 2010**

Area of concentration :

- Human Resources Development (HRD)
- IT Infrastructure Development (IISD)
- Research and Development (R&D)
- E-Governance (EG)
- Socio-Economic Development (SED)
- Security and Legal Issues (SLI)
- IT Industry (ITI)
- Other Areas

Short Term Action Plans – by 2002

HRD1(s) - The public and private universities and BITs should double the intake to produce sufficient number of IT graduates. These institutions should also start one-year application oriented postgraduate diploma courses on IT.

HRD2(s) - Infrastructure capabilities of colleges should be strengthened to produce IT graduates in 4-year courses in Computer Science/ Technology. One-year postgraduate diploma programs should be introduced in all major public and private colleges.

HRD3(s) - Diploma and Trade courses in IT may be offered by technical training institutes and polytechnics. The Ministry of Education and the Directorate of



Technical Education should encourage the unemployed youth for these training's/courses.

HRD4(s) - Due emphasis must be given to produce qualified teachers/trainers by conducting intensive postgraduate diploma courses at selected institutes.

HRD5(s) - The continual IT skill upgrading of existing professionals must be ensured by in-service training programs to be conducted by specialized institutions.

HRD6(s) - A national standard IT course curriculum and certification/examination procedure should be introduced.

IISD1(s) - A separate ministry to expedite the growth of IT industry in Bangladesh shall be established immediately.

EG1(s) - To accelerate activities for sustainable development in the IT sector, the National Council for Information Technology (NCIT) shall be formed under the Ministry of Information Technology and to be headed by the Honorable Prime Minister.

IISD2(s) - National information infrastructure should be built to ensure Internet access to public and private institutions such as libraries, educational institutions, community centers, R&D organizations, etc. by the year 2002.

EG2(s) - Data security and protection of intellectual property rights should be ensured through enactment of legal framework to create an environment that facilitates rapid growth of all networks and promotes interoperability,

EG3(s) - Data traffic of pornographic, subversive and matters prejudicial to state principles via internet should be regulated by the Law of the Land.

IISD3(s) - Information Technology Villages (ITVs) with high speed data communication facilities should be established and software development/export companies should be encouraged to set up offices in those parks at preferential terms.

IISD4(s) - A national data communication network must be established providing high speed channels for point-to-point or multi-point data transmission with all kinds of information transmission such as voice, texts, fax, data, image, video etc.

RD1(s) - National Council for Information Technology (NCIT) should form a National Task Force headed by a cabinet minister to co-ordinate the research and development activities in IT to be implemented by key public and private institutions and R&D organizations.

SLI1(s) - Data security and interoperability should be ensured through.



actions such as setting of encryption standards and international agreements on interoperability.

SLI2(s) - 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 should be covered by appropriate penal codes and IT acts.

SLI3(s) - For the growth of domestic software market and attracting Foreign Direct Investment (FDI) in the IT sector Intellectual Property Rights/Software Copyright Law, 2000 should be implemented effectively.

ITI1(s) - A National Software Development Plan (NSDP) should be formulated in order to develop domestic software market and minimize dependencies on foreign made software.

EG4(s) - The Nationalized Commercial Banks (NCBs) shall setup venture capital to help entrepreneurs to establish centers for software development.

IISD5(s) - Bangladeshi expatriates should be encouraged to setup such development centers through incentives such as equity participation by state, stock contributions, subsidies, preferential credits, joint ventures, etc.

ITI2(s) - Bangladesh, having the advantage of cost effectiveness of labor and so shall endeavor for expansion and export of data entry and other IT-enabled services.

EG5(s) - National standards for Bangla software, character codes, keyboard, etc. should be established in order to deliver services to people through computerized information processing and decision making as well as for the growth and development of domestic software industry.

ITI3(s) - Institutions should be identified and developed for standardization, testing and quality certification of all IT related products and services.

EG6(s) - Concerned public and private organizations must allocate adequate resources to establish email, web site and network for office automation.

RD2(s) - A centralized fund should be created under the aegis of NCIT for financing R&D activities by the public and private universities, R&D organizations in IT sector.

IISD6(s) - Internet facilities to be introduced in all universities in Bangladesh.

IISD7(s) - Cyberkiosks in all districts headquarters, cities, and Upzilas to be established.

EG6(s) - All institutions to have web sites and introduce e-mail.

Medium Term Action Plans – by 2005

HRD7(m) Computer studies should be introduced gradually by 2003 in every college, and by 2005 in every school.

HRD8(m) To meet the growing demand of the IT personnel both for the domestic and global market, especially in the fields of telecommunications and multimedia, one Information Technology University (ITU) and a Telecom University shall be established in the country .

HRD9(m) Regular Training of The Teachers (3T) for IT education should be assured.

IISD8(m) Country-wide telecommunication network shall be established through high speed digital systems by BTTB and it should be linked to the global network.

IISD9(m) A central depository for collection and dissemination of IT information and research findings should be developed.

HRD9(m) Steps should be taken to formulate a plan for foreign training of personnel in IT development, including policies and measures to provide fellowships for students training or undertaking research abroad in the subjects and at the levels needed.

SED2(m) IT experts of Bangladesh origin living abroad should be encouraged to return home by creating proper environments and providing them with adequate incentives for investment in IT in the country.

EG7(m) Steps should be also taken to make IT-based policies on currency, finance, security of transactions, monetary stabilization and economic management in general in order to introduce the fast growing electronic commerce in the country.

EG8(m) A Market Promotion Fund to be administered by EPB has to be established for meeting the expenses of promoting Bangladesh in the global IT market as a potential source of Software and Data Processing Services.

EG9(m) Computers and Internet access shall be made available in every school, college, university, BIT, polytechnic, public medical college and hospital in the country by the year 2005.

Long Term Action Plans – by 2010

RD2(l) Research & development in IT needs to be intensified and should focus on applied research, giving the potential to implement the technology and



knowledge transfer, contributing to the improvement of quality and efficiency of the application of IT in our country.

RD3(1) The Ministry of Information Technology is to formulate plans to initiate vigorous R&D activities in Universities/Polytechnics, Colleges and BITs, Companies belonging to economic sectors and involve the young generation in research and development activities.

IISD10(1) For enhancing the capability of local IT industries, spending shall be gradually increased to achieve a margin of 1.5% of GDP by the year 2010. For service industry in IT, the joint collaboration with foreign counterparts should be encouraged.

IISD11(1) Efforts shall be made to strengthen existing networks like BERNET & BANSLINK and to establish a nation-wide data communication network for education, research and development for resource sharing under procedures and standard of the Internet and through a common gateway likable to Internet.

EG10(1) The government should implement large scale Information systems to assist in managing large volumes of transactions that occur in the public services each day.

IISD12(1) A network of management information system comprising national databases to store and supply all necessary information for decision making by the state machinery's should be establish including GIS under a unified program.

IISD13(1) Steps should be taken by the Bangladesh Bank to computerize all banks in the country with electronic and credit-card based transactions.

SED3(1) The Government and other stake holders should assist in creating IT awareness among various levels of general public, disseminate information on computer, IT and related subjects by means of mass-media such as press, radio and television in order to establish a Knowledge-based society.

EG11(1) Appropriate plans and strategies shall be put in place to ensure technology transfer through building and using proper IT infrastructure in the country.

ITI4(1) For promoting locally developed software products, fifteen percent price preference shall be given.

SED4(1) Research and development institutions, universities and private IT companies in the country should be encouraged to develop software applications in order to establish Bengali support for database, optical character recognition, web and e-commerce applications.

ITI5(1) Promotion of hardware industries in the country should be encouraged to



establish production facilities of PCBs, motherboards, peripherals, accessories with joint venture and technology transfer agreements.

EG12(1) The Ministry of Information Technology should explore and execute sub-regional and international cooperation and collaborative agreements on IT with developed and developing countries and also with International Agencies.

EG13(1) All sorts of Government publications and notifications have to be made available on the web. SROs, forms etc. to be made accessible through websites.

Welcome to e-Bank Presentation

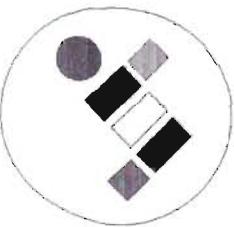
**PRESENTED TO
EAST WEST UNIVERSITY
DEMO**

Indosoft Systems BD Ltd.

7th floor, Iqbal Centre, Kemal Ataturk Avenue,
Banani model Town, Banani, Dhaka, Bangladesh

Email : indosoft@accesstel.net

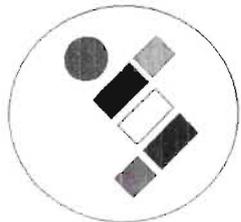
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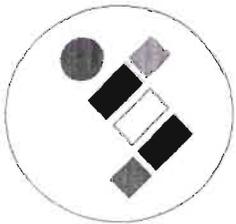
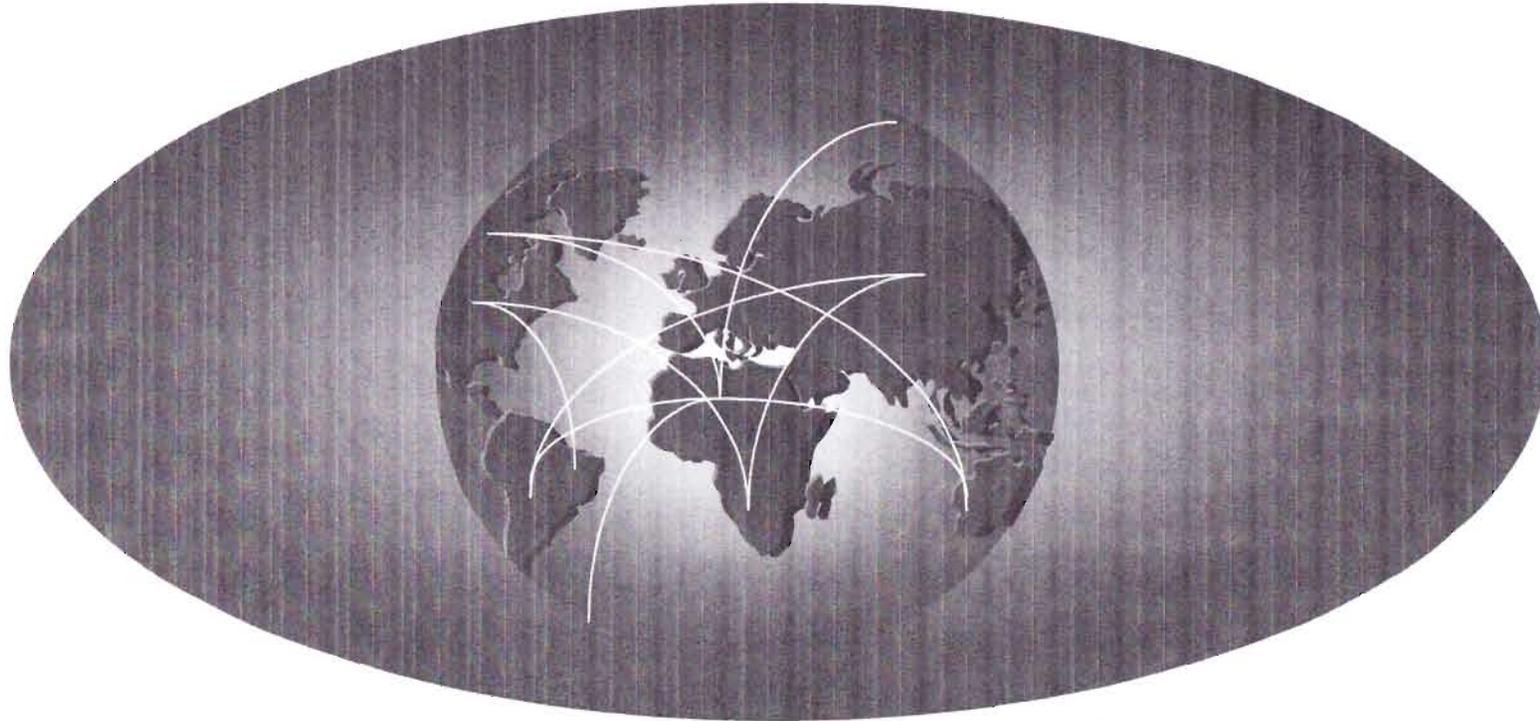
**Web Technology based system supporting
Multi-Currency, Multi-Location**

INNOVATIVE....RELIABLE....SCALABLE....WEB SOLUTION



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Voice: 880-2-9886528,602256 Fax: 9881650 Email : www.indosoftsys.com

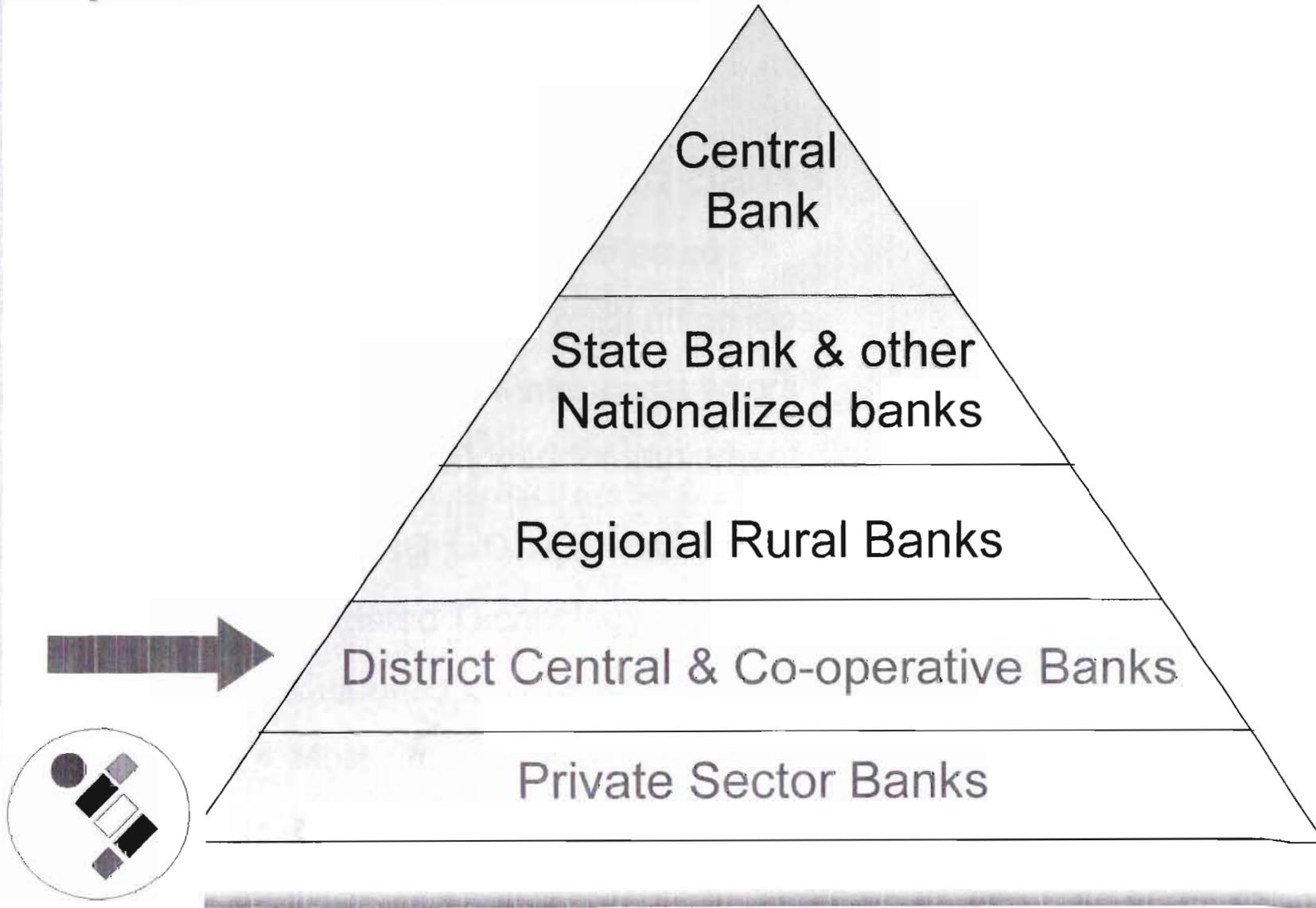
The e-Bank *Changes* Everything



Not Just A Technology Change
A New Way Of Doing Business

Speculated Milestones of e - Bank

eBank



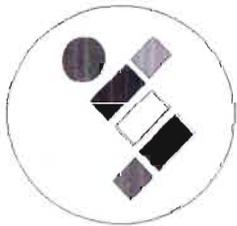
Existing Scenario

Manually operated Banks

- Customer service affected
- Time wasted in back office jobs
- Scope for un-intentional errors
- Heavy workload for implementation of new / better schemes

Existing Computerized banks

- Outdated Technology
- Customer service affected
- More time spent on maintenance
- Delays in implementing customer attractive schemes

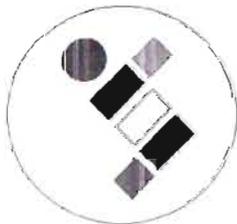


Outdated Technology

- ? Use of primitive database like Clipper, FoxPro, MF-COBOL
- ? Two tier architecture makes upgrades / maintenance difficult
- ? Difficulty in procurement of software upgrades / maintenance
- ? CUI based Front end
- ? Cumbersome procedures for simple tasks
- ? Specific to developed hardware and software

Latest Technology

- √ Oracle Database
- √ Three tier architecture makes upgrades / maintenance effortless
- √ Old versions compatible with new upgrades
- √ GUI based Front end
- √ Automatic scheduling of tasks, tedious procedures are accomplished by just a click.
- √ Scalable across various hardware platforms and software cartridges

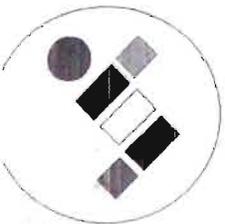


Customer Services Affected

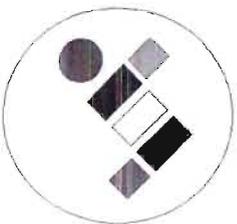
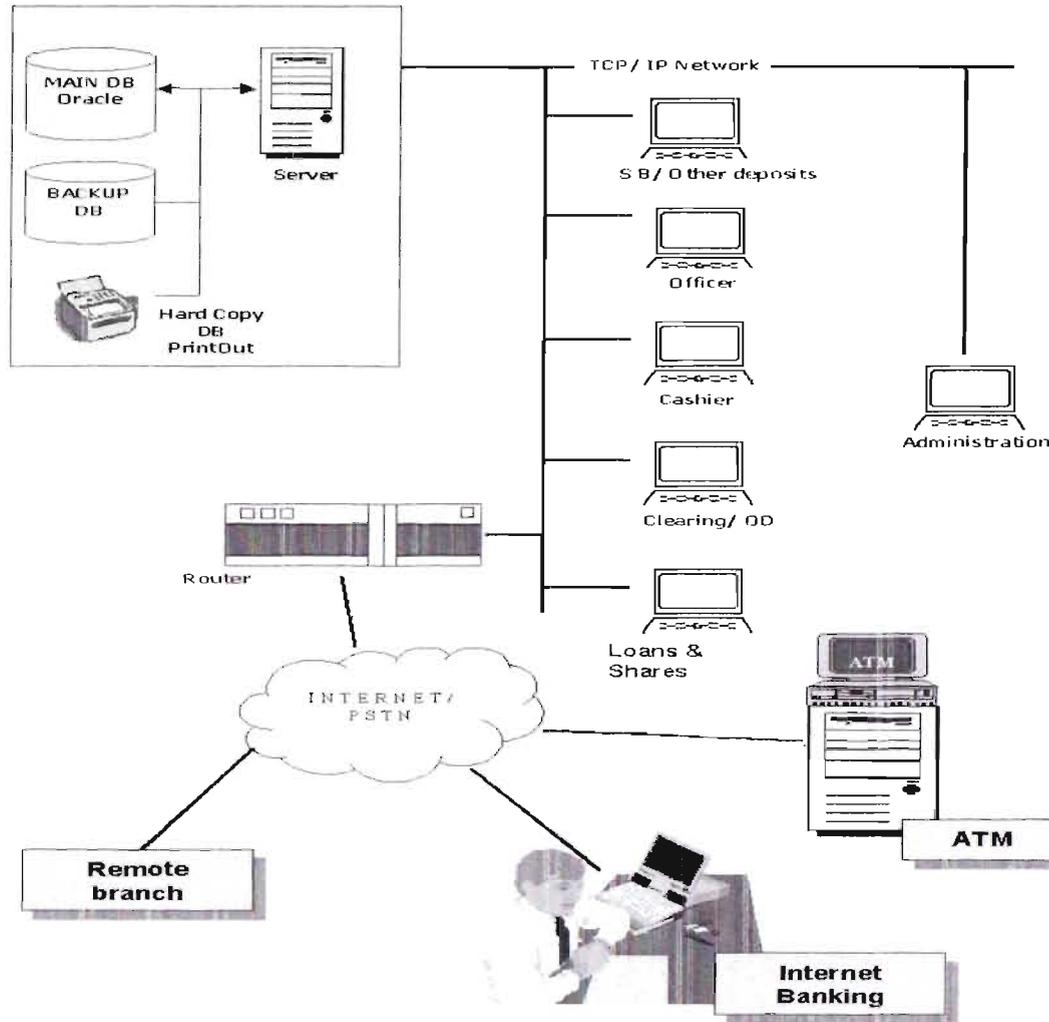
- Customer needs to wait for any delayed services
- Difficulty in implementing new / better schemes
- Delay in retrieval of old data

Customer Services Enhanced

- √ Instant retrieval of information and processing
- √ Easy to set up new schemes
- √ Old data stored as archives for faster retrieval



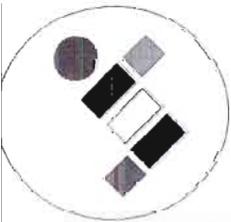
System Architecture



System Requirement (Server)

eBank

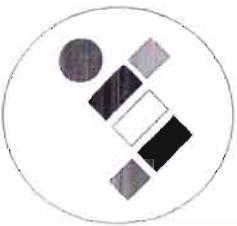
Processor	P III 350 or Above
System RAM	128 MB (Min)
Hard Drive	4.3 GB (Min)
OS	Windows NT Server / Linux Server / Unix Server, Etc.
Other S/W	Java, Oracle
UPS	Recommended
Backup Devices	Tape Drive



Workstation Configuration

eBank

Processor	386 or Above
System RAM	16 MB
Hard Drive	850 MB
OS	Windows 95/98/NT, Linux, Etc.
Other S/W	Browser (Java enabled)
UPS	Recommended

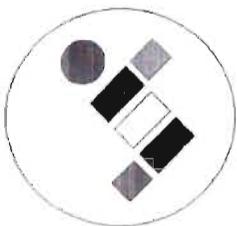


e- Bank Benefits

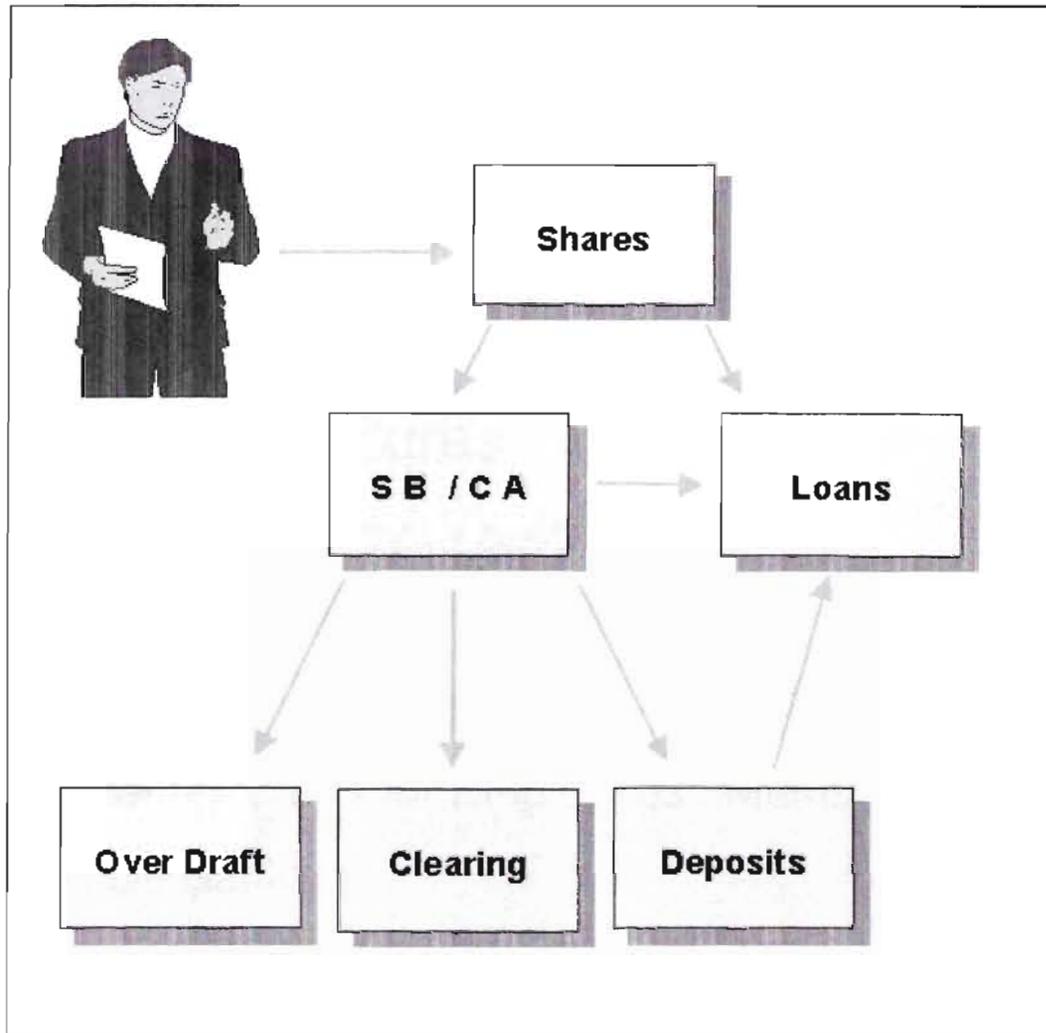
- Avoids manual book keeping
- On line posting of ledgers
- Automatic reconciliation
- Error free interest posting
- One touch reports for management and RBI



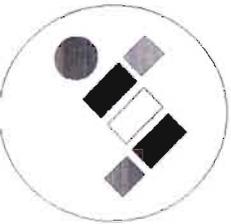
Modules



MODULES - INTERRELATED



- Standing Instructions
- Back Office Jobs
- Head Office
- Optional Features
 - Signature & Photo capture
 - Remote Banking
 - Fingerprint assisted ATM & Locker Operations
 - Identity Cards for Employees / Members / Customers
 - Tele Banking
 - Anywhere Banking



MODULES

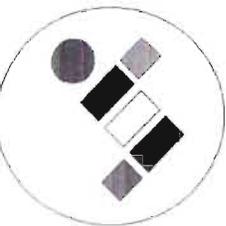
- Accounts
- Transactions
- Deposits
- Shares
- Clearing
- Loans
- Overdrafts / Open Cash Credits
- Lockers / Safe Custody



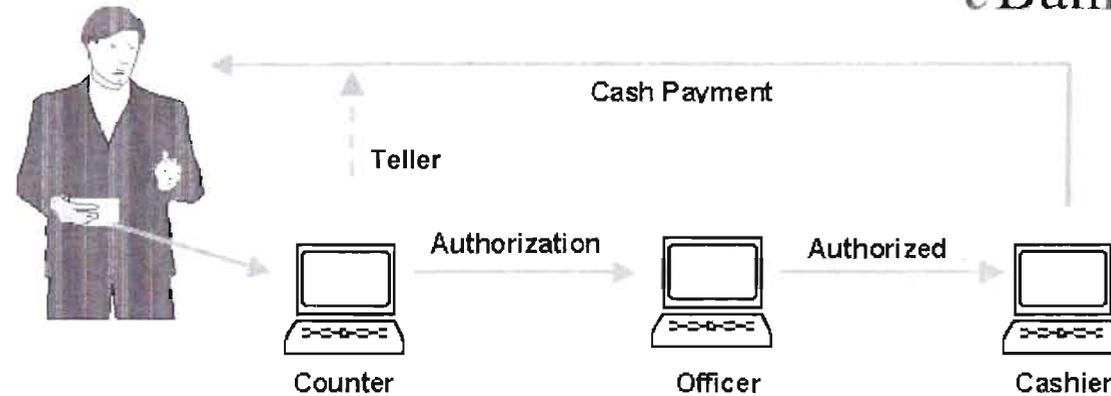
MODULES

eBank

- Accounts
 - Create New Account Types
 - Open Accounts
- Transactions
 - Receipts & Payments authorized by an approving authority
 - Stop Payment instructions
 - DD, Pay order
 - Teller
 - Signature Verification

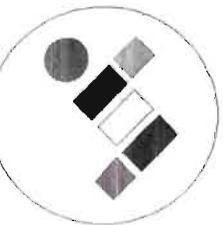


Transactions

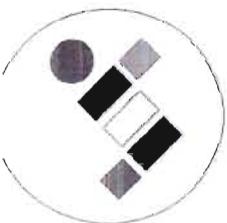


Receipts & payments authorized by Officer

- Stop payment instructions
- DD, Pay order
- Denomination report available to the Cashier.
- Signature verification

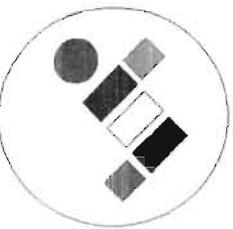


- Deposits
 - Easy setup of any kind of Deposits
 - Deposit Renewals
 - Online deposit queries
 - Automatic interest calculation and posting
 - Standing Instructions for Interest transfers
- Shares
 - Allotment of Shares
 - Issue of Share Certificates
 - Dividend Calculation
 - Partial / Complete Transfers
 - Share Cancellations
 - Dividend Warrant generation and automatic posting



MODULES

- Overdrafts / Open Cash Credits
 - Receipts & Payments
 - On-line inquiry
 - Closure and Renewals
 - Credit limit updates
- Lockers / Safe Custody
 - Easy setup of Locker types
 - Locker opening
 - Locker rent
 - Locker operations
 - Fingerprint based Locker operations (optional)



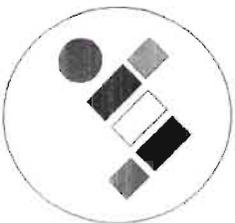
MODULES

•Clearing

- Inward and Outward clearing
- Sorting of MICR cheques
- Bills for clearing and Bills for discounting
- Single / Multiple Credits - Single / Multiple Debits

• Loans

- Easy setup of loan types
- Automatic scheduling of disbursement and repayment
- On-line inquiry
- Rebates and Penalization
- Parking, Posting & Capitalization of loans
- Insurance Details



- Optional Features

- Signature & Photo capture

- Capture signature by signature pads.

- Capture photographs by online camera.

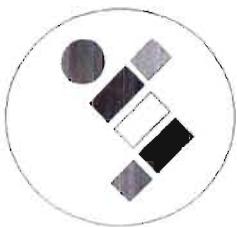
- Visual verification of signature / photograph during transactions.

- Fingerprint assisted ATM & Locker Operations

- Capture and verify fingerprint of customers to authenticate users

- Capture / Verification done by fingerprint scanning device

- Fingerprint details stored in database to avoid tampering



MODULES

- Standing Instructions
 - Transfer of funds based on time or amount
 - Transfer of interest, dividend, installments
 - Freezing / Seizing accounts
- Back Office Jobs
 - Customizable Reports
 - Day book / Cash book
 - General Ledger
- Head Office
 - Inter / Intra branch reconciliation
 - Transaction consolidations of branches



MODULES

•Optional Features ...

•Remote Banking (Internet banking)

Issue fund transfer instructions

View details of transactions

View details of cheques issued

Stop payment instructions

Cheque book requests

Requests for statements

Issue Standing Instructions

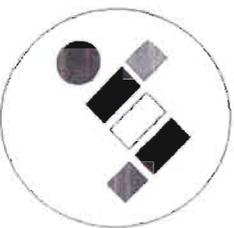
Mail account for customer for correspondence

Wire transfers

View news and information of customer interest

Forex rates

many more



Optional Features

- Identity Cards for Employees / Members / Customers

 - Tamperproof photo identity cards

 - Use identity card for access control, ATM

 - Online capture of photo and printing

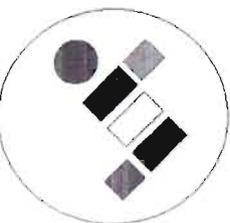
- Tele Banking

 - Check account status

 - Issue stop payment instructions

 - Cheque book requests

 - many more



Optional Features

- Anywhere Banking

Flexibility to bank from any of the branches

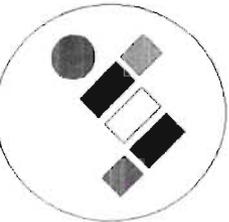
Online verification and updation of accounts across branches

Pay up outstanding, request statements, withdraw cash, etc.. from remote branch.

Latest Technology

- ATM facility
- Finger print login for data security (administrators / safe vaults ...)

Signature / fingerprint verification for customers



Reports

- RBI Specific reports

All reports as required / specified by RBI

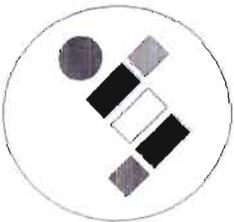
Easy change of report formats, contents

- Report Wizard

Create your own specific reports

Change / add contents to the existing reports

Easy, flexible and efficient feature for all your reporting needs



Phase wise Implementation

Questionnaire - Bank information

Customization

Entry of existing account details

Updation of account balances and GL balances

Online transaction with backup manual process

Comparison of online and manual processes

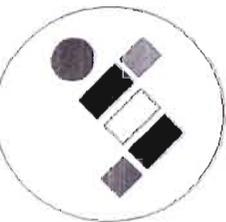
Fine tuning of the features and facilities

Training & Support

Training at every phase of implementation

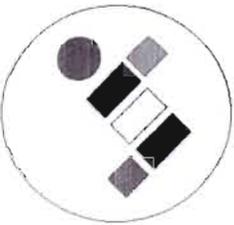
Administration training for a responsible bank employee

Round the year support and upgrades



Demonstration of

e - Bank



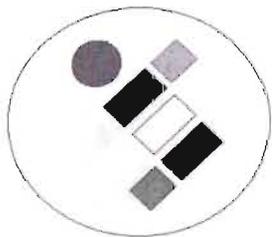
Welcome to Medi+Net Presentation

Indosoft Systems BD Ltd.

7th floor, Iqbal Centre, Kemal Ataturk Avenue,
Banani model Town, Banani, Dhaka, Bangladesh

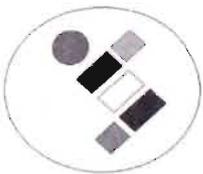
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Medi+Net

Hospital Information Management System



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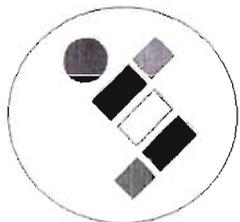
Medi+Net *Changes* Everything



- Not Just A Technology Change
- A New Way Of Managing Your Hospital

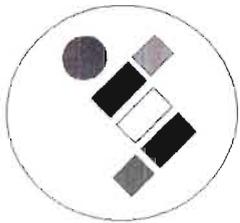
Goals & Objectives

- ❖ Effective Communication within the Hospital and with external agencies
- ❖ Knowledge Repository - Patient case history
- ❖ Efficient General Administration and Accounting



Major Modules

- ❖ Outpatients
- ❖ Inpatients
- ❖ Common Services
- ❖ Inventory
- ❖ Image Processing
- ❖ Remote Health Care Cell
- ❖ Hospital Administration & Payroll
- ❖ Case Histories
- ❖ Optional Features



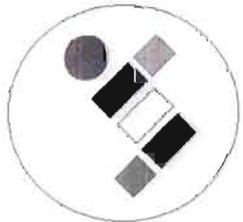
Inpatient Module

- ❖ Registration
- ❖ Ward Administration
- ❖ Surgery & OT
- ❖ Births and Deaths
- ❖ Dietary
- ❖ Patient Records
- ❖ Consultant & External Service Billing
- ❖ Billing & Discharge



Outpatient Module

- ❖ Registration
- ❖ Re-visits
- ❖ Departments
- ❖ Casualty
- ❖ Outpatient Billing



PATIENT REGISTRATION

Patient Identification Number

Admitted On

Patient Name

Father / Husband Name

Date of Birth

Male Female



15/10/1999
15:26:25

Address

Emergency Contact Number

Blood Group

Marital Status

Identification Marks

Ward and Room Number

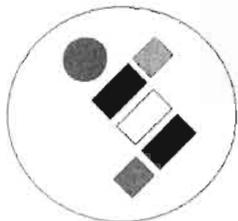
Referred By

Duty Doctor Incharge

Next to Kin

Relationship with the Patient

Address of Kin



PATIENT MONITORING

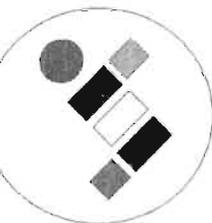
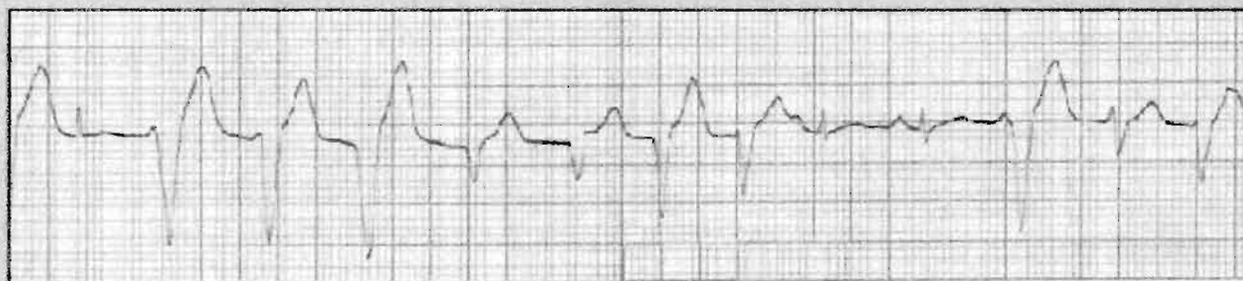
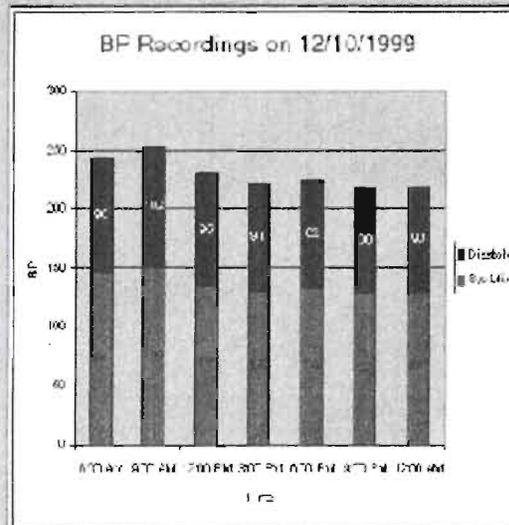
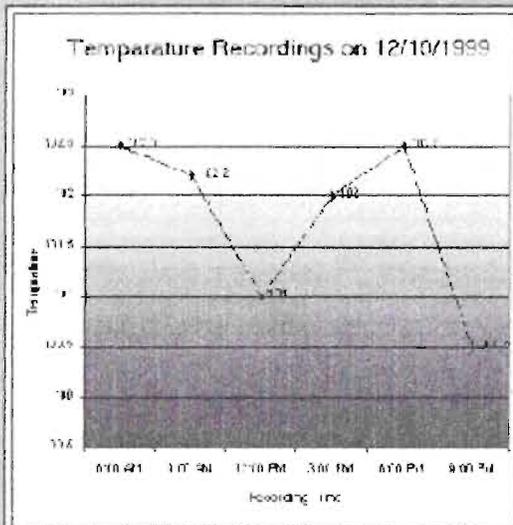
Patient Identification Number

Ward and Room Number

19/10/1999

Patient Name

12.23.15



Ward Status Report

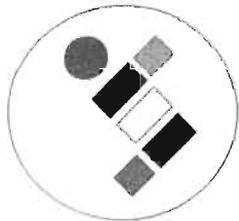
Reports

Ward Type	Bed No	Patient Name	Date of Admission	Doctor Incharge
General	2	Geetha	2/12/00	Dr. Shantha
	3	Ganesh	2/14/00	Dr. Gopi
	4	Jayanth	1/29/00	Dr. Shyam
	5	Puttaswamy	2/12/00	Dr. Deepak
	7	Raghu	2/4/00	Dr. Lawrence
	9	Raja	2/9/00	Dr. Gopi
Special	1	Chandrashekar	2/13/00	Dr. Deepak
	3	Shashi	2/7/00	Dr. Shyam
	4	Raghevendra	2/11/00	Dr. Deepak
	5	Venkatesh	2/12/00	Dr. Gopi
	6	Sunil	2/13/00	Dr. Lawrence
	Deluxe	2	Paul	2/11/00
3		Radha	2/8/00	Dr. Shantha
4		Mariam	2/13/00	Dr. Shantha
VIP	1	Sushma	2/12/00	Dr. Gopi
	2	Hussain	2/13/00	Dr. Gopi
	3	Maya	2/12/00	Dr. Gopi

Outpatients Report

	Patient Id	Patient Name	Department Visited	Consultant Visited	Billed Amount
1	34556	Prakash	X-Ray	Jaykishan	500.00
2	45664	Ramesh	Cardiology	Dr. Gopi	350.00
3	2342	Kiran	Urology	Dr. Shantha	200.00
4	2322	Mahesh	ECG	Dr. Gupta	400.00
5	43433	Indira	Cardiology	Dr. Gopi	150.00
6	65775	Rageshwari	X-Ray	Jaykishan	200.00
7	23112	Maduhri	Urology	Dr. Shantha	75.00
8	45663	Jayamma	X-Ray	Jaykishan	250.00
9	23332	Harish	Cardiology	Dr. Gopi	135.00
10	34763	Divakar	X-Ray	Jaykishan	550.00

Total Collection 2810.00



Inpatient Billing

Date: 15/02/2000

Patient Identification No 00--02-786
 Patient Name Kiran Kumar
 Patient Address 32, CMH Road, Indiranagar, Bangalore

Service	Amount
Ward Charges	750.00
Surgery Charges	5750.00
Blood	200.00
Anesthesia Charges	650.00
Consultation Charges	1500.00
Duty Doctor visits	400.00
Professional charges	500.00
Nursing Charges	250.00
Oxygen Charges	700.00
Drugs & Injections	1350.00
Miscellaneous	2300.00
Total	14350.00

