For My Beloved Wife

INFORMATION SYSTEMS FOR
HEALTH AND POPULATION SECTOR IN BANGLADESH:
EVOLUTION, STRUCTURE, GAPS AND NEED-BASED DESIGN

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CERTIFICATE

Certified that the work incorporated in this thesis entitles "**Information Systems for Health and Population Sector in Bangladesh: Evolution, Structure, Gaps and Need-Based Design**" was carried out by **Md. Saiful Alam** under our supervision.

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DECLARATION

The work reported in this thesis is original and has not been submitted by me to any university or institution for the award of any degree or diploma.

Such material as has been obtained from other sources is duly acknowledged in this thesis.

Md. Saiful Alam

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List of Abbreviations

AACR-2	Anglo-American cataloging Rule 2
AIC	Agricultural Information System
AVSC	Association of Voluntary Surgical Contraception
BANSDOC	Bangladesh National Scientific and Technical Documentation Center
BAVS	Bangladesh Association for Voluntary Sterilization
BBS	Bangladesh Bureau of Statistics
BDHS	Bangladesh Democratic Health Survey
BIRDEM	Bangladesh Institute of Research and Rehabilitation in Diabetes, Endocrine and Metabolic Disorders
BMA	Bangladesh Medical Association
BPATC	Bangladesh Public Administration Training Center
BSMMU	Bangabandhu Sheikh Mujib Medical University
BTTB	Bangladesh Telephone and Telegraph Board
CAS	Current Awareness Services
CBD	Community Based Distribution
CCF	Common Communication Format
CD-R	Compact Disk –Recordable
CD-ROM	Compact Disk-Read Only Memory
CD-RW	Compact Disk-Rewritable
CDS/ISIS	Computerized Documentation System/Integrated Set of Information System
CMR	Child Mortality Rate
CPR	Contraceptive Prevalence Rate
CYP	Couple Year of Protection
DBA	Database Administration
DCI	Data Collection Instrument
DDC	Dewey Decimal Classification
DDFP	Deputy Director of Family Planning
DFP	Directorate of Family Planning

DHS	Directorate of Health Services
DSS	Decision Support System
EDD	Electronic Document Delivery
EPLA	East Pakistan Library Association
ESCAP	Economic and Social Commission for Asia and Pacific
ESP	Essential Service Package
FP	Family Planning
FPAB	Family Planning Association of Bangladesh
FPI	Family Planning Inspector
FP-MCH	Family Planning-Maternal Child Health
FPSTC	Family Planning Services & Training Centers
FWA	Family Welfare Assistant
FWC	Family Welfare Centers
FWV	Family Welfare Visitor
GDP	Gross Domestic Products
GFR	General Fertility Rate
GTZ	German Agency for Technical Cooperation
GUI	Graphical User Interface
HA	Health Assistant
HeLLIS	Health Literature Library and Information Services
HNPSP	Health, Nutrition and Population Sector Program
HPN	Health, Population and Nutrition
HPSP	Health and Population Sector Program
HPSS	Health and Population Sector Strategy
ICPD	International Conference on Population and Development
IEC	Information Education and Communication
ILL	inter-library loan
IMR	Infant Mortality Rate
INFS	Institute of Nutrition and Food Science
IPHN	Institute of Public Health and Nutrition
ISP	Internet Service Provider

KAP	Knowledge Attitude and Practice
LAB	Library Association of Bangladesh
LAN	Local Area Network
LC	Library of Congress Classification
LEB	Life Expectancy at Birth
LISU	Library and Information Service Unit of ICDDR,B
MARC3	Machine Readable Catalog 3
MATS	Medical Assistant Training Schools
MCH	Maternal Child Health
MCH-FP	Maternal Child Health-Family Planning
MIS	Management Information System
MMR	Maternal Mortality Rate
MO	Medical Officer
MOHFW	Ministry of Health and Family Welfare
MS-SQL	Microsoft Standard Query Language
NBC	National Book Center
NCPC	National Council for Population Control
NGO	Non-Government Organization
NHLDC	National Health Library and Documentation Center
NIPHN	National Institute of Public Health and Nutrition
NIPHP	National Integrated Population and Health Program
NIPORT	National Institute of Population research and Training
NIPSOM	National Institute of Preventive and Social Medicine
NLB	National Library of Bangladesh
NLIS	NIPORT Library and Information Service
NLM	National Library of Medicine
NPC	National Population Council
OPAC	Online Public Access Cataloc
ORP	Operation Research Project
OS	Operating System
PDEU	Population Development and Evaluation Unit

pdf	portable data format
POPIN	Population Information Network
RDBMS	Relational Database Management System
RH-FP	Reproductive Health – Family Planning
SACMO	Sub-Assistant Community Medical Officer
SDI	Selective Dissemination of Information
SDP	Service Delivery Point
SSC	Service Statistics Cell
STD	Sexually Transmitted Disease
SWM	Sector-wide Management
TBA	Traditional Birth Attendant
TCP/IP	Transfer Control Protocol/Internet Protocol
TFPO	Thana Family Planning Officer
TFR	Total Fertility Rate
THA	Thana Health Complex
TPS	Transaction Processing System
UGC	University Grant Commission
UHFWC	Union Health and Family Welfare Center
UMIS	Unified Management Information System
UNFPA	United Nations Fund for Population Activities
UNICEF	United Nations International Children's Emergency Fund
VHSS	Voluntary Health Services Society
WAN	Wide Area Network
WHO	World Health Organization
WINISIS	Integrated Set of Information System- Windows Version

Chapter 1

Introduction

Chapter Outline

Introduction

Access to and use of timely and reliable information from the possible sources is one of the prerequisites for the successful operation of an organization. From the inception toward fruitful end of an enterprise, sound evidence underpins decisions about policy direction, resource allocation and management. A good information system encourages responsive and effective service delivery. Like other service organizations, effective Health and Population Sector Programs in Bangladesh is also dependent on a suitable information system. Now the scope of health and population programs has extended further with the inclusion of National Nutrition Program within the framework named "Health, Nutrition and Population Sector Program (HNPSP)" (MOHFW 2003:2). A workable information system is also essential for research and development of the sector. In response to the programmatic needs, an information system has been recognized as "an essential support service" and concerned authority- Ministry of Health and Family Welfare has been trying to establish formal information system under the banner Management Information System (MIS).

Professionally an information system is viewed from two aspects: firstly, the routine information- a mechanism designed to derive data/information at regular intervals of a year or less through to meet predictable information needs. The second is knowledge level information systems which serve the interested groups responsible for idea conceptualization and generation, learning, and creating new information and update the knowledge base. In the first category, the information systems include mechanism for collecting and using:

i. health services statistics for routine service reporting and special program reporting (malaria, TB, and HIV/AIDS);
ii. administrative data (revenue and costs, drugs, personnel, training, research, and documentation);
iii. epidemiological and surveillance data;

iv. data on community-based health actions; and

v. vital events data with births, deaths and migrations (WHO 2006: 7).

Since 1975 several steps have been taken to establish such a regular data collection and reporting system under the banner "Management Information System". But unfortunately still it is a distant dream. Although there are many libraries and information centers have been established in the sector to support its knowledge base, most of the libraries are working in scattered ways and there is neither inter-sectoral network nor any interrelationship between library and MIS section within the institution. In order to respond to this necessity, it is important to explore the real situation in the information sector, consider information needs, ensure proper data capture, storage, organization and communication mechanism, free flow of information among functional units, inter linking between research and information centers in the integrated environment. In the present study an attempt has been made to design a need-based integrated information system for HNPSP in Bangladesh.

1.1 Rationale

The efficiency of health and population program in Bangladesh is heavily dependent on two factors: (1) how effectively and timely the rural people are communicated with health and population information, (2) quick feedback from grass-root levels and mobilization of necessary information on the real situation among policy makers, researcher, government bodies and relevant implementers. To ensure free flow of information from policy making to the extreme end of implementation of HNPSP, an information system in the integrated concept becomes essential to encounter the challenges of the 21st century's success in the national health and population programs in Bangladesh.

The information professionals in Bangladesh have carried out some relevant research and studies. However, not much attention has been paid so far to the specialized information system. Though concerned ministry is in the

process of developing a routine data system, the MIS has been severely criticized for its narrow coverage, faulty output, under utilization of data, etc. Similarly no initiative has been taken to develop proper library and information systems let alone the integration of library system and MIS. Considering the socio-economic, technical, infrastructural, policy and administrative issues of the country, the design of an integrated information system is the main focus of the study. This research work is expected to be a pioneering work in Bangladesh and would:

- Help the information workers and concerned authority in health, nutrition and population sector organizations to realize their information needs and shortcomings of their information systems.
- Form the basis of setting up a central databases including full specification of data capture and recording mechanism, data validation and error check, easy mobilization of data among the functional units.
- Promote analysis of mechanisms and experiences related to collection and use of health and population related data/information.
- Promote productive networks and linkages among the existing information systems and working professionals in the sector.
- Define mechanisms for coordinating investment in the collection and use of health and population related information sources.
- Analyze and disseminate best practices in routine health information collection and use.
- Be used as guidelines for improving the situation or designing new service or information products.
- Assist the policy makers, governing bodies, implementers to realize system needs and investment guidelines to design an effective information system for the sector.
- Provide necessary software support for technology based information service and connecting the systems outside world.
- Help to create an integrated information system that will ensure free flow of information from central to the grass-root level among the functional units across the country.

1.2 Objectives of the study

The prime objective of the research was to explore the information activities in the HNPSP sector in Bangladesh and to design a need- based information system appropriate for the integrated health and population program. The detailed objectives may be segmented as follows:

i. Exploring existing situation and identifying the problems and inconsistencies in library and information practices among the functional units in the integrated environment of HNPSP.

ii. Assessment of information needs and approaches to the resource centers of the people working in HNPSP and beneficiaries.

iii. Design an integrated information system for HNPSP in Bangladesh that will constitute two provisions: i) Knowledge-base system and (ii) MIS (Management Information Systems).

iv. Choosing appropriate information technology for different settings, providers, and levels, and promoting effective information use.

v. Increasing access to information on best practices, innovation, and lessons learned in the integrated information systems and approaches.

1.3 Scope

Conceptually, an information system study is consisted of some basic components: exploration of existing systems resources and ability of the personnel; users' needs and satisfaction levels; actual achievement of running systems; definition of the goal(s) to be achieved and analysis of the roadblocks to be encountered.

The evolution of the whole system has been analyzed at the very beginning of the study. An attempt has been made to investigate the information sources in use, tools and techniques for its manipulation. The study specially focuses

upon the inconsistency between users' demand and provision of information services. To ensure free flow of information, the study has also tried to assess the technological needs of the information systems. It also pays due attention to software development and necessary technical details for computer based data storage, retrieval and transfer among functional units especially working at the union level and above.

1.4 Methodology

In this study more than one methodological approaches have been be employed. The study has some logical steps:

(i) Exploring evolutionary background of information systems in the said sector in Bangladesh;

(ii) Finding the existing situation of the library and information centers;

(iii) Assessment of the information needs of different user groups;

(iv) Plan a suitable information system for the Integrated environment HNPSP;

(v) Planning ICT and necessary software design.

In the initial stage, all the relevant existing literature was reviewed to explore the evolutionary background. In depth interviews have been conducted for finding the existing situation of the library and information centers and assessment of the information needs of different user groups. Library and information units of population and health institutions and their personnel, concerned users, researchers have been the population. All relevant data have been analyzed using SPSSWIN and reports have been written using MS-WORD and MS-Excel software. Two seminars were organized to share the findings of the study.

1.5.1 Literature review

Existing literature on the topic were studied and reviewed to examine the status of information activities in the health and population sector in Bangladesh. A comprehensive bibliography of the available literature has been referenced at the end of the dissertation. It is to be mentioned here that

no single comprehensive work was found having discussion on the integration of the scattered information activities. Therefore, the researcher had to depend on different reviewed reports on health and population sector MIS.

1.5.2 Sample design

To ensure representation from different types of libraries and information centers in the health, nutrition and population sector and considering the services and usefulness to the users, twelve libraries have been selected and brought under the investigation. Here it is to say that due to interdisciplinary nature, it has been difficult to identify specific category of the information centers and many of them are serving health, nutrition, population as well as some other allied subjects.

Table 1.1 List of sample libraries with the year of establishment

ID	Name	Year Established
1	Bangabandhu Sheikh Mujib Medical University Library (BSMMU)	1965/1998*
2	ICDDR,B Library and Information Services Unit (LISU)	1978
3	National Health Library and Documentation Center (NHLDC)	1974
4	National Institute of Population Research and Training Library and Information Services (NLIS)	1976
5	Bangladesh Institute of Research and Rehabilitation in Diabetes, Endocrine and Metabolic Disorders (BIRDEM) Library	1956
6	Dhaka Medical College Library	1946
7	Directorate of Family Planning Library	1980
8	Institute of Nutrition and Food Science (INFS) Library	1969
9	Institute of Public Health and Nutrition Library	1982
10	Ministry of Health and Family Welfare Library	1980
11	National Institute of Preventive and Social Medicine library	1976
12	Department of Population Sciences Library, Dhaka University	1998

* Established in 1965 as "Institute of Post-Graduate Medicine and Research (IPGMR)" and was renamed as BSMMU in 1998.

To identify the category we have basically considered institutional objectives and the subject coverage of the collection. As a result, 25% (3) samples have been selected which have equal emphasis on health, nutrition and population sector. The rest 9 samples information centers have been distributed proportionately: 4 (33.3%) in health, 3 (25%) in population and 2 (16.7%) in the nutrition sector. The list of sample libraries and information centers are shown in table 1.1:

To explore the information needs and seeking behavior at least ten users have been interviewed from each information system. Research fellow, administrator and policy makers, doctors, teachers/faculty members/trainer, student/trainee are the main user groups. The distribution of user groups in different categories of institutions has been presented in the table 1.2.

Table 1.2: Distribution of the types of sample users by sector

	Health		Population		Nutrition		HPN		All	
User Groups	N	%	N	%	N	%	N	%	N	%
Researcher	2	1.7	13	10.8	6	5.0	4	3.3	25	20.8
Administrator / policy maker	3	2.5	9	7.5	3	2.5	2	1.7	17	14.2
Doctor	10	8.3	4	3.3	-	-	9	7.5	23	19.2
Teacher	8	6.7	11	9.2	7	5.8	2	1.7	28	23.3
Student / Trainee	7	5.8	13	10.8	4	3.3	3	2.5	27	22.5
Total	30	25.0	50	41.7	20	16.7	20	16.7	120	100.0

1.5.3 Data Collection Instruments (DCI)

Data have been collected using two sets of structured questionnaire of which one was prepared for the survey of the sample libraries and another for the interview of the users. Both the DCI were duly pre-tested and finally structured keeping in view the objectives of the study. To explore the real situation of the libraries and information centers, the DCI for libraries has been segmented into nine sections. On the other hand to review the information needs of concerned users and their information seeking behavior variables in the DCI for users have been structured in three separate sections (Appendix 3). A brief outline of the sections and variable/indicators are shown in the tables 1.3 and 1.4:

Table-1.3: DCI for Lib. and Inf. Centers- Sections and Variable/indicators

ID	Section Title	Variable indicators
01	Institutional profile	Name of the library/information center, name of parent organization, category by main focus, year of establishment, address etc.
02	Information resources	Collection statistics by type of materials, methodology and processes for selection and acquisition, accessioning process, policy and activities for acquisition of digital information resources
03	Processing	Status and activities for information processing including cataloging, classification, indexing and abstracting, database management system status and process.
04	Services	Availability and coverage of different type of library and information services including reading room services; reference and/or information services; circulation/loan system, Inter-library loan system, bibliographical services Indexing and abstracting services, Current Awareness Services (CAS), Selective Dissemination of Information (SDI), news clipping, in-house database/CD-ROM searching, Electronic Document Delivery (EDD), Internet and online browsing facilities, users visits and service statistics.
05	Human Resources	Staffing structuring, existing workload, economic and social status professionals, scope for professional development staff evaluation, trends toward adapting ICT, etc.
06	Administration and finance	Library administrative and financial structure, financing sources, budgetary tends, participation of librarian in different administrative and financial activities, fund raising activities for organizational sustainability
07	Library building and infrastructure	Library building and space management, equipments and infrastructure with special attention to ICT infrastructure.
08	KAP of ICT	Knowledge Attitude and Practice (KAP) of ICT, definition of different type technological skills and status of KAP among the information workers, knowledge sources.
09	Applications of ICT and Library Automation	Resent status of library automation in different sub-systems e.g. acquisition, processing, circulation management, serial control, bibliographical services, transaction management, management and financial control, etc. knowledge and practice of digitization and digital librarianship, networking and resource sharing activities, Internet facilities and usage.

Table-1.4: DCI for user groups- Sections and Variable/indicators

ID	Section Title	Variable indicators
01	User profile	Male, sex, type of user, category of institution and name of the attested institution, area of specialization/interest.
02	Information needs	Institutional supports and sources of information to be consulted in meeting four categories of information needs: general, supporting, research and recreational; general awareness on information services to be provided by specialized information centers; expected mode of information delivery.
03	Information seeking and use	Purpose and frequency of visit to the library and information centers; time spent in different type of information activities. the library and information centers; frequently used information sources and their availability; information locating strategy frequently adopted by the user, expected services and their extent of availability; constraints to faced in different type of information activities. recommendations of the user to improve the situation.

1.4.4 Data processing, analysis and presentation

After receiving the duly filled in questionnaires, the some functional steps have been followed for data processing, analysis and presentation. These steps include:

i. Recording the answers of open ended questions.
ii. Prepare code manual and coding all the answers in the questionnaires.
iii. Design database using SPSSWIN 12, impose variable labels and value labels, necessary constraints and validation check as per instruction of the code manual.
iv. Entering the coded data in the database.
v. Data cleaning and removing/correcting inconsistencies.
vi. Prepare tabulation plan.
vii. Produce 73 tables in which 49 have been used in the text and rest 24 have been presented at the annex tables.
viii. Using output tables, a total of seven graphical presentations have been designed and presented using Microsoft Excel software.

1.5 Organization of the text

The text of the dissertation comprises five broad chapters excluding preliminaries and appendices. According to the study design, each chapter has contained the phase-wise output of each logical steps of the study. A brief content of the chapters is given below:

Chapter one: Introduction

The introductory chapter concentrates on the problem statements, objectives and rationale of the study. It also describes methodological issues applied to the study.

Chapter two: General background

The basic aim of the chapter is to explore the evolutionary background of the study. This chapter has been written based primarily on documentary research. This chapter focuses on the socio-economic background of Bangladesh, evolutionary story of health and population sector programs within the domain of Ministry of Health and Family Welfare. The gradual development of health and population information system in the country has also been explored in the chapter. A general overview of the existing library and information system and services in Bangladesh with brief historical background has also been discussed.

Chapter three: Findings of the survey- I

The existing situation of the Library and information centers in the sector has been highlighted in this chapter. Besides short description of the sample libraries, different aspects of acquisition, processing, circulation, serial control, finance, administration and technological issues have been discussed and analyzed in the chapter.

Chapter four: Findings of the survey- II

Chapter four aims at assessing the information needs of the users working in the field of health, nutrition and population. This chapter highlights the general awareness of the library and information services as well as the gaps between their expectation and availability of services. The chapter also tries to

measure the unmet needs and expected mode of information delivery. Due attention has been paid to explore the information seeking behavior, constraints in using libraries and information sources.

Chapter five: Model plan

A model plan has been suggested for the health, nutrition and population sector information system. The architecture and operational framework of the proposed system has been discussed in the chapter. This chapter also tests the feasibility of the proposed system as well as defines system requirements, equipment and technological imperatives. At the end of the chapter, system constraints have been identified and recommendations have been made for successful implementation of the proposed system.

Chapter 2

General Background

Chapter outline

General Background

2.1 Socio-economic background of Bangladesh

Bangladesh born in 1971, is small country of 147570 square kilometer and more than 140 million people (in 2007). The country is almost entirely surrounded by India, except for a short southeastern frontier with Myanmar and a southern coastline on the Bay of Bengal. It stretches between 20°34′ and 26°38′ north latitude and 88°01′ and 92°41′ east longitude. For administrative purposes the country is divided into 6 divisions, 64 districts, 501 thanas, 4451 unions and approximately 87928 villages (BBS 2003: 2). Muslims constitute 90 percent of the population, Hindus 10 percent, and less than 1 percent is constituted by other religion. The National language is Bangla, which is spoken and understood by all.

2.1.1 Population

Bangladesh is one of the most densly-populated countries in the world. According to the population census 2001 the country has a population of about 130.03 million of them 67.10 million male and 62.93 female. The population growth rate during 1991-2001 was1.54% which was 2.0% during 1981-1991. The relatively young age structure of population indicates continued rapid population growth in the future. According to 2001 population census, 39% of the population is under 15 years of age, 57% between 15 and 64 years and 4% with 64 years and over. The percentage of population living in rural ad urban areas is 76.90% and 2.10% respectively. Bangladesh is now the ninth most populous country in the world. The national level density of population is 839 per square kilometer which was720 in 1991. Bangladesh population policy indicates that the population should stabilize at 210 million by 2060 if replacement fertility will be reached by 2010. (BBS 2003 :11-17)

The Total Fertility Rate (TFR) of the 15-49 age group women has declined from 6.3 in 1975 to 3.0 in 2001-03. The TFR of rural women is 3.2 and urban is 2.5. The General Fertility Rate (GFR) is 117. This means that there are 117

births for every 1000 women of reproductive age. The proportion of unplanned birth has declined from 33% in 2000 to 30% in 2003.

Over the past three decades the use of contraceptives by married women has increased seven folds from 8 in 1975 to 58% in 2003. The contraceptive prevalence rate (CPR) was 54% in 1999-2000. Women in urban areas are slightly more likely to use contraceptive methods (63%) than rural counter part (57%). However, eleven percent married women have an unmet need for family planning which was 15% during 1999-2000 (BDHS 2004: pp. xix-xxi).

2.1.2 Health

According to BDHS survey in 2004, 39% women received antenatal care from a doctor and 17% from nurse, midwives and paramedics. Two in every three received at least two tetanus toxoid injections and 15% received none for their most recent birth. Only 13% babies were delivered by medically trained providers and about 63% by untrained birth attendant. Nearly four in ten women with complications did not seek any care.

Data from the 2004 BDHS shows that under-five mortality has continued to decline (88 deaths per 1000 live births). However, it is also alarming that one of every eleven babies dies before reaching age five due to different causes. Seventy three percent children 12-23 months of age are fully immunized while 3% have received no vaccination. Among children under five years of age 21% have been reported to have respiratory illness of which one fifth have been taken to health facility providers. 40% children had a fever with them, of them two third were taken to providers for treatment. Almost all (98%) children have been breastfed for some period of time while 42% children under six months have been deprived from exclusive breastfeeding. 20 to 25% of the children in this group received other complementary foods.

About 60% ever married women have the knowledge of HIV/AIDS. Overall six in ten women and 42% men knew the way to avoid these diseases. 29% ever married women have been able to cite two or more correct ways to avoid

contracting HIV/ADIS. Knowledge of STD (Sexually Transmitted Disease) is generally lower than that of HIV/AIDS. 94% women and 78% men do not have any knowledge of STDs.

2.2.3 Literacy level

According to Bangladesh Bureau of Statistics 45.3 percent of the total population are literate. It is to note that the people who can read and sign his name are included in the definition of literacy. Table 2.1 may highlight the literacy rate at different levels (BBS 2006, 372-3).

Table 2.1: Literacy rate at rural and urban areas by sex

Indicator	National	Rural	Urban
Primary school net enrollment ratio			
Male	84.6	83.7	85.4
Female	86.4	85.6	87.2
Literacy rate of population 5+			
Both sex	47.1	43.8	61.1
Male	50.9	47.5	65.1
Female	43.2	39.8	57.0
Literacy rate of population 7+			
Both sex	49.1	45.7	63.2
Male	53.1	49.7	67.4
Female	44.9	41.4	58.3
Literacy rate of population 15+			
Both sex	50.3	46.1	67.1
Male	56.3	52.2	72.7
Female	44.2	39.9	61.2

Source: BBS, Statistical pocketbook, 2005

2.1.4 Economy

Agriculture is the most important sector in Bangladesh of the nation's economy. It accounts 3.29% of the Gross Domestic Product (GDP). Jute and tea are the principal cash crop of Bangladesh. Rice is also one of the most important agricultural products in Bangladesh. Other important crops are wheat, corn, pulse, potato, oil seeds, sugarcane, tobacco and fruits such as banana, mango, and pineapple. The contributions of major non-agricultural sectors to the national GDP are: 7.17% from mining and quarrying, 6.5%

from industry, 8.2% from electricity, gas and water supply, 6.85% transportation and communication, and 6.6% from financial intermediating (BBS 2004: 476)

There is about 34.2 million economically active population in the country. Of them 30.1 million are male and 4.1 are female. The number of unemployed population is 1.7 million. Out of the total workforce 19.17 million people are engaged in agricultural works, 5.50 in business, 1.29 in industry, 32.44 in household works, 1.46 in transportation and communication, and 8.14 in other profession.

2.3 Health and Population Program in Bangladesh

Historical background

Health and population sector programs in Bangladesh has passed through a metamorphosis in terms of its nature, goals, programmatic strategies and services and that took place over 50 years. Ministry of Health and Family Welfare (MOHFW) and its attached departments such as Directorate General of Health Services, Directorate of Family Planning in their official website (www.dgfpa.gov.bd English) has cascade their program history in to ten transitional phases. Based on different literature, the salient features of each phase of activities are given below:

Phase I: 1953-59: Voluntary and semi-government efforts

- Family Planning Association was founded in 1953 by a group of dedicated social workers without any government support.

- A few motivational activities were undertaken such as publishing feature articles on newspaper, counseling among mothers visiting medical clinics, gynae wards of district and subdivision hospitals etc.

Phase II: 1960-64: Government sponsored clinic-based Family Planning Program

- In 1960, the government sponsored clinic-based family planning activities under health services started.

- Some voluntary organizations were involved in clinic based counseling and dissemination of knowledge about contraceptives by physicians and paramedics.

- The Government set up a target of providing family planning services to 6.7 percent eligible couples and opened a family planning center in every hospital and rural dispensary.

- Initiatives were taken to setup a number of family planning clinics, training cum research institutes and integration of FP program with the National Development Plan.

Phase III : 1965-70: Field-based Government Family Planning Program

- In 1965, FP program took greater shape with the establishment of the Directorate of Family Planning with a target of persuading 25 percent of the eligible couples to practice family planning by 1970.

- Field based family planning program were started especially clinical contraception such as sterilization, IUD.

- A large number of 'dais' (Traditional Birth Attendants) were deployed in the rural areas to start Community Based Distribution (CBD) programs with condoms, foam tablets and jelly. (Barkat et.al. 1997: 7).

- Financial incentives for clinical contraceptive acceptors and recruiters, radio program "Shukhi Paribar" introduced.

- Beside the national program some voluntary organizations were involved to supplement and complement the national program efforts both in the provision of family planning supplies and services and in undertaking promotional activities. The program came to a standstill during the Liberation war in 1971.

- A statistical compilation unit called "Service Statistics Cell" (SSC) was established for collection, aggregation, analysis and transmission of programs and service related data to the headquarters (PEDU 1996: 1).

Phase IV: 1972-74: Integrated Health and Family Planning Program

- During the first five year plan (1973-78) the program base was broadened by integrating Maternal and Child Health (MCH) activities, recruiting field workers, setting up mobile sterilization teams, establishing thana MCH clinics and encouraging the NGOs and private sector to join in population activities.

- It was decided to establish Family Welfare Centers (FWCs) at Union level. Accordingly 13,500 full time female Family Welfare Assistants (FWA) were recruited and trained to make house-to-house visits to inform couples about family planning and to distribute contraceptives.

- Administrative process for decision-making was shifted from the autonomous Family Planning Board and the Council to the Ministry of Health and Family Planning.

- Oral pill was introduced in the family planning program as a method of contraception.

- The provision of part-time village level dais was abolished.

Phase V: 1975-80: Maternal and Child Health (MCH)-based Multi-sectoral Program

- In August 1975, a separate Directorate of Family Planning and an independent Division of Population Control and Family Planning in the Ministry of Health were created.

- A National Population Council - the highest policy making body - was constituted with the President of the People's Republic of Bangladesh as the chairperson and development-concerned ministries as members.

- A Central Co-ordination Committee was also formed with the Minister for Health and Family Planning as chairperson and secretaries of concerned ministries as members to coordinate implementation and review progress of multi-sectoral population activities under different ministries.

- In January 1976, the Government declared the rapid growth of population as the number-1 problem of the country.

- In June 1976, the Government approved a National Population Policy outline.

- Full-time male and female field functionaries were recruited on regular basis to expedite the MCH- FP program in rural Bangladesh.

Phase VI: 1980-85: Functionally Integrated Program

By 1980 FP programs have been expanded a lot in terms of coverage- urban to rural inaccessible areas, cafeteria approach in choosing contraceptives, contraceptive methods- emphasis on temporary to permanent methods, administrative steps- functional integration of health and FP services and decentralization of authority, physical infrastructure- Service delivery point (SDP) to rural areas, logistics and supply system. The major achievements are:

- Delivery of MCH-FP services were functionally integrated with Health at upazila level and below.

- MCH-FP became also a function of health officials.

- The National Population Council (NPC) was reconstituted into a high-powered National Council for Population Control (NCPC) headed by the President of the Council of Ministers.

- An Executive Committee headed by the Minister for Health and Population was formed.

- An unified command had been established at the top by the merger of the two divisions of Health and Population Control under one Secretary of the Ministry of Health and Population Control.

- Upazila Family Planning Committee had been formed to be chaired by the Chairperson of Upazila Parishad for facilitating implementation of the program at the local level.

- Initiatives were taken for systematic registration of clientele at domiciliary level through introduction of forms and registers to ensure recording of service recipients by demographic characteristics and also their subsequent follow-up.

Phase VII: 1985-90: Intensive Family Planning Program

- A broad-based multi-dimensional intensive MCH-based family planning program was launched.

- Rapid FP- MCH infrastructural development by commissioning more service centers (Union Health and Family Welfare Centers---UHFWC) in rural areas was initiated.

- In each thana one Thana Health Complex (THC) and one FP-MCH clinic were established.

- Traditional Birth Attendant (TBA) training took place in Family Welfare Center (FWC) by the Family Welfare Visitors (FWV) under the guidelines of Medical Officers at thana level

- Unit-wise FWA registers were introduced for record keeping of family planning and demographic events of households.

- Satellite clinic - an outreach activity – was introduced to deliver MCH-FP services in remote and rural areas.

- During this phase, Information Education and Communication (IEC) program was emphasized at different levels with FP and MCH issues.

- The third five year plan (1985-90) laid great emphasis on introducing innovative NGO activities. During this period, NGOs accounted for around 37% of contraceptives and distribution and supply of modern methods in Bangladesh.

Phase VIII: 1990-98 Integrated Health and Population Programs

The FP and health programs in 90s emphasized institutional improvement of combined health and FP-MCH services to the doorstep of the people aiming at Health for All by 2000" and attainment of replacement level fertility by the year 2005. In this phase the most mention worthy activities were:

- Initiatives taken to attain functional integration of both the Directorates of Family Planning and Health by:
  - (i) Instituting coordination among satellite clinics and family planning outreach center.
  - (ii) Combining the family welfare centers (of family planning) and the rural dispensaries (of Health) as common service points.

(iii) Establishing MCH-family planning services in all hospitals and medical colleges with priority given to mother and child care.

(iv) Organizing 800 service delivery static centers (Barkat et. al 1997: 14). .

- By 1996, some 55 percent of children under two years were fully immunized, and another 32 percent partially immunized which were 2% during 1985.

- The government decided to introduce some cost recovery measures through charging for contraceptives and service charge to attain financial sustainability.

- Increased involvement of NGOs and private sectors for supplementing and complementing government efforts.

Phase IX: 1998-2003: HPSP and NIPHP

i) Health and Population Sector Program (HPSP)

The International Conference on Population and Development (ICPD'94, Cairo Conference) approached a new life cycle oriented Reproductive Health (RH) concept with family planning and added many more components into the population program beyond the traditional FP-MCH components. Among the newly developed components, important ones are RTI/STD, HIV, AIDS, adolescents health, women's empowerment (with equality and equity), and violence against women (Barkat et.al 2000 :1)

Consistent with the ICPD mission, the Ministry of Health and Family Welfare's owned its strategic vision for the next 10 years (1995-2005) were (MOHFW, 1994: 6):

- To increase access to family planning services for all those who have an unmet need for contraception.

- To improve the quality of family planning services so that ail users will use contraception longer without dropping out and can use contraceptives more effectively.
- To enhance male participation in family planning.
- To revitalize the use of long-term methods.
- To improve the long-term financial sustainability of the program.
- To reach the replacement level fertility.

As part of the reform process, government undertook several initiatives in the last few years. Among them the notable ones were formation, formulation and approval of the National Plan of Action (based on ICPD'94 recommendations), National Policy on HIV/AIDS and STD related issues, National Reproductive Health Strategy, National Food and Nutrition Policy, National Health Policy, National Population Policy, National Women Development Policy, and most importantly the Health and Population Sector Strategy (HPSS) and formation of a High Level Committee (HLCOM) to reorganize Health and Family Planning Directorates and the Health and Family Welfare System in line with the HPSS spirit, and adopting the concept of Sector-wide Management (SWM). Based on these, the government developed and approved the Health and Population Sector Program (HPSP) for 1998 – 2003 (Barkat et.al. 2000:2). With the primary focus on Essential Services Package (ESP) the missions of HPSS were to:

(i) Design and implement the Essential Service Package (ESP);
(ii) Reorganize public sector service provision;
(iii) Improve financial sustainability;
(iv) Build a greater role for the private sector and NGOs; and
(v) Review and update the National Drug Policy.

ii) National Integrated Population and Health Program (NIPHP)

To provide a package of basic services to the disadvantaged population of Bangladesh in both the rural and urban areas, family planning NGOs were invited to participate in implementation of Service Delivery Component of the USAID supported National Integrated Population and Health Program

(NIPHP) (Barkat 1997: 20). The NIPHP was a partnership between USAID, its seven cooperating agencies and the government. The primary purpose of the NIPHP was "to enhance the quality of life of poor and underprivileged members of society by helping to reduce fertility and improve family health". This was planned to accomplished through:

a) Delivering an essential package of high quality, high impact family planning and health services to the areas of greatest need;
b) Promoting awareness and use of those services through a variety of information, education and communications to protect and to provide for their own health;
c) Enhancing the ability of individuals, families, and communities to protect and to provide for their own health;
d) Building a strong NIPHP organization and supporting systems to maximize integration of services to clients and coordination among the partners;
e) Promoting sustainability throughout the delivery chain; and
f) Encouraging the government to develop and implement a policy framework that facilitates and mobilizes government and non-government resources in support of the NIPHP to the community level.

Phase X: 2003-2006: Health, Nutrition and Population Sector Program (HNPSP)

According to the Directorate of Family Planning "Unfortunately, the family planning program during HPSP under the unified structure at the upazila and below level contributed to a loss of momentum in RH-FP service delivery, and the program became almost paralyzed" (www.dgfpa.gov.bd_English/). To overcome the multidimensional problems and to meet the challenge according to the spirit of the International Conference on Population and Development (ICPD), the Government of Bangladesh upon review decided in January 2003 to reestablish separate organizational structures and authority for health and family planning as they existed before July 1998 and launched the Health,

Nutrition and Population Sector Program (HNPSP). This aimed to reform the health and population sector. The program entails provision of a package of essential and quality health care services responsive to the needs of the people, especially those of children, women, elderly and the poor. Within the HNPSP, the health and family planning structure is now functioning under separate management system. In the meantime, the FWA register and house visitation by the FWAs have been reintroduced in the program after 5 years. The MIS unit of the Family Planning Directorate has been functioning independently as before after 5 years and started publishing monthly reports on performance of RH, FP-MCH. The ultimate goal of the HNPSP is to achieve NRR-1 by the year 2010. The priority objectives of the HNPSP are:

- To reduce Total Fertility Rate (TFR) from 3.3 to 2.8 by the year 2006.
- To increase Contraceptive Prevalence Rate (CPR) from 54 % to 62% by the year 2006.
- To reduce Maternal Mortality Rate (MMR) from 3.2 to 2.75 by the year 2006.
- To reduce Infant Mortality Rate (IMR) from 66 to 48 per 1000 live birth by the year 2006.
- To reduce Child Mortality Rate (Under 5) from 94 to 70 per 1000 live birth by the year 2006.
- To increase Life Expectancy at Birth (LEB) from 61 to 66 by the year 2006.
- To reduce burden of TB and other diseases.
- To reduce malnutrition by the year 2006 (MOHFW 2003:2).

Since 1956 health and population programs have been running with different types of changes in terms of objective, policy matter, administrative structure, financial support, implementation agencies, management, etc. Based on the prior experiences, MOHFW used to design a particular phase with some fixed target to be achieved in a certain period of time. But unfortunately, in most of the cases the programs failed to attain the major targets particularly in the health sector programs. However, the achievements of family planning programs have been acclaimed much in Bangladesh and abroad.

2.4 General Characteristics of Library and Information Practices in Bangladesh

Formal library and information practice in Bangladesh dates the middle of the nineteenth century (Mannan 1997: 93). At present different types of libraries are running in the country on their own ways. Maximum of these libraries are not well equipped with modern facilities including Internet and electronic publications. As a result, the learners, researchers, professionals of the country remain deprived of the world of knowledge and the existing literature meet a little of the information requirement of the educated section of people.

Learning resources comprise books, journals, magazines, documents, reports, photographs, maps, illustrative materials, audiovisuals, electronic information resources, etc. The change in the format of presenting and preserving knowledge from clay tablets now to electronic format, particularly databases and Internet resources, has been seen. This change has warranted a change in behavior patterns of disseminating knowledge. Many changes originated from the developed world, which had an indirect and direct impact in acquiring knowledge and information in the developing world. This change has also been impacting in organizing services in libraries and information centers in Bangladesh. A few libraries and information centers have been adopted the changes or trying to up to date their services according to the user needs.

2.4.1 Early history

The library development in Bangladesh is closely related with the history of library development in Indian sub-continent. The evolution of library in the Eastern part of Indian subcontinent was a private initiative with the establishment of Public Library in Calcutta (Kolkata) in 1835 which is now the National Library of India (Mannan 1997:92). This library movement was jointly started by some natives and British Civil Servants in the early 1800's. As a result, in Bangladesh region (the then East Bengal), the Jessore Public Library was established in 1851 by dint of Public Library Act 1950. Three

others- Woodburn Public Library at Bogra, Barisal Public Library at Barisal, and Rangpur Public Library at Rangpur- were established with in 1854 (Khan 1984:126). According to Ahmed (1987:22) before mid of 1800's most libraries in Bangladesh were privately owned and were available to certain groups. Years of efforts by librarians and other concerned citizens had radically changed this narrow role of libraries. Some other public libraries established during British period that are still in service are (in chronological order): Rajshahi (1871), Dhaka (1874), Comilla (1885), Pabna (1890), Noakhali (1897), Sylhet Price memorial (1897), Chittagong Municipal (1904), Cox,s Bazar (1906), Jessore Ram Narayan (1907), Munshiganj (1908), Rangpur (1906), Kishoregonj (1909), Faridpur (1914), Kushtia (1914), Khulna (1914), Mymensingh (1939), Dinajpur (1930) (Khan,1984:128).

Academic librarianship was also incepted during the British rule. Dhaka University Library led the foundation of university library in 1921 with 18,000 books from old Dhaka College. Up to 1943 there were 32 first grade colleges in Bangladesh including Dhaka College library established in 1841. Some other important college libraries such as at Chittagong College (1869), Rajshahi College(1871), Dhaka Jagannath College (1884), Narail Victoria College (1886), Barisal Braja Mohan College (1889), Pabna Edward College (1894), Comilla Victoria College (1899) were established with a good number of collections (Ahmed 1994:52-3).

The development of library and library services was quite insignificant during Pakistan period (1947-71). Khan (1984:126) has highlighted on the situation that "Unfortunately a very little attention was given to libraries and library development". According to Khan, library and library services seemed buried with the category 'Others' and shared a little portion of the education budget which was 20% of the National Budget. However, Central Public Library was established in 1954 during the first five year plan (1955-60) on the basis of the recommendation of L.C. Key, an Australian consultant. Evidence shows that after a nine-month bloody war, Bangladesh inherited about 175 public libraries and information centers established during British and Pakistan period (Khan, 1984:133). In another statistics, Khan (1971:161) shows that there were 112

public libraries in East Pakistan in 1971. In accordance with the recommendation of UNESCO in 1964 the Government of Pakistan decided to establish National Library of Pakistan with subsidiaries in Dhaka, Karachi and Lahore. In 1968, the central library came into being as a depository under Pakistan Copy Right Act 1962 (Sattar 1998:12). There was a proposal for the establishment of 100 libraries at thana level in the third five year plan of Pakistan (1965-70). For implementation, the government formed 'East Pakistan Library Development Committee' in 1969. But all efforts were stalled by the out break of the liberation war in 1971 (Mannan, 1990:114). According to Ahmad (1994:53) the growth and development of special libraries started from 1965. However, According to Shamsuddoula (1971:182) there were 256 special libraries in Pakistan (East and West).

2.4.2 Type of libraries

There is no unique authority or any coordinating agency for the management of existing library systems in Bangladesh except the government public library sector. From the capital city to the rural areas different types of libraries are serving different users with varied collections that are financed and administrated by different authorities. A brief description of the existing situation of national, public, academic and special library systems in Bangladesh are given below:

2.4.2.1 National libraries

"The National Library of Bangladesh" (NLB) is the central government library in Bangladesh responsible for accumulating the national literature by dint of 'Bangladesh Copy Right Act 1974'. According to official sources of NLB its total collection of is about 200,000. Every year they are to publish annual compendium of the nation bibliography. Bangladesh National Archives is situated on the same building of NLB and both the two are operated under the Ministry of Cultural Affairs. Besides the National Library of Bangladesh, there are other three specialized national library systems exists in the country. These are Bangladesh National Scientific and Technical Documentation Center (BANSDOC) in the field of science and technology, National Health

Library and Documentation Center (NHLDC) in the field of health and medicine; and Agricultural Information System (AIC) of Bangladesh Agricultural Research Council in the field of Agriculture. These special types of national libraries are trying to accumulate the national literature on respective disciplines. The National library of Bangladesh maintains close relation with BANSDOC, NHLDC and AIC and publishers.

2.4.2.2 Public libraries

The public library movement in Bangladesh was started in 1849 with the establishment of Jessore Public Library. There are other three ag-old public libraries established during the British rule (1849-1861): these are Woodburn Public Library, Barisal Public Library, and Dinajpur Public Library. These four libraries have historical and cultural significance though many ancient documents were destroyed and stolen during liberation war in 1971.

Since Independence to 1982 public libraries were working under "Bangladesh Parishad" which was the successor to the then East Pakistan Council. In 1983, Department of Public Libraries was established by integrating all government public libraries under the Ministry of Cultural Affairs (Rahman 1993:174). Now all the government public libraries in Bangladesh are running under Department of Public Libraries of the Ministry of Cultural Affairs. The Central Public Library in Dhaka is working as the head quarter of the department. According to the official statistics of the Department of Public Libraries, there are 68 government public libraries (including four branch libraries) in 64 districts.

The Central Public Library has about 200,000 publications including local journals and newspapers. In the reading room, the shelves are open for all. The central public library also has a children's section. The libraries at the district level are not attractive; collection ranges from two to ten thousand.

Beside this there are 1043 non-government public libraries in the country running with government assistance. The non-government public libraries are

managed by government grants, membership fees, contribution from different organizations etc. The grant is now distributed directly by the Ministry of Cultural Affairs through the National Book Center. The main objective of this assistance is to supply books, furniture and library equipment to the enlisted libraries.

According to a survey conducted in 1990 the National Book Center traced the existence of 369 non-government public libraries in Bangladesh. However, up to 1993 they enlisted 430 libraries across the country (Rahman 1993: 172-76). Besides the government registered libraries, there are many public or societal libraries in Bangladesh. The accurate statistics is difficult to provide until a baseline survey is conducted from capital to rural Bangladesh. It is estimated that there are more than three thousand such type of libraries in the country that are being maintained by youth clubs, cultural societies, associations and personal initiatives. The collections of these libraries are characterized by the nature of the parent organization. Another segment of public libraries are operated by Islamic Foundation Bangladesh under Ministry of Religious Affairs. There are about three thousand Mosque libraries in Bangladesh.

2.4.2.3 University libraries and other academic libraries

The establishment and development of university libraries in Bangladesh are closely related with the establishment of the universities. Dhaka University library is first university library in Bangladesh established in 1921. Up to 1990 there were only 9 public universities hence university libraries in Bangladesh. Now there are 11 public universities and 52 private universities. The collection and services of public university libraries are more extended than that of private university libraries. None of the private university libraries is more than ten years old and collection ranges from 2 thousand to ten thousand. Whereas the collection of Dhaka University Library is more than 600,000, Rajshahi university library 300,000 and Jahangirnagar University library has about 200,000 publications.

All the university libraries are traditionally well organized. Many of them maintain bibliographic databases and Internet facilities. Some of the universities have their own web site and separate page for libraries. However, we do not find their information products, even the catalog on the web. Recently Dhaka University Library and North South University Library have taken initiatives to host their online catalog.

As public universities are autonomous body, the library budgets share the budget of the university. Each of the university libraries is controlled by the university itself and shares the budget released from the University Grant Commission (UGC). Government College libraries administrated and financed by the Ministry of education and the non-government college libraries by the government grant and college authority. It is to note that a significant amount of library budget comes from student fees.

It is mainly due to lack of baseline survey providing accurate information about college libraries in Bangladesh is difficult. But according to BBS statistics there are 2288 colleges(private and public), 24 medical colleges , two dental colleges, 24 polytechnic institutes and engineering colleges, 42 law colleges, 4 agriculture colleges and two home economics colleges in Bangladesh (BBS 2006:359). According to the rule of the government for affiliation, any college must have a library with minimum 500 collections. Considering this clause it is expected that every college belong a library of its own. But in practice except a few, most of the colleges do not have any proper library facilities with them.

To express the real situation of non-government college libraries, Hossain (1993: 63) mentioned that about 90% of the 512 non-government college libraries had no usability in the real sense of library services. 98% of these libraries have no separate library building. The collection of these types of libraries ranges from 500 to 5000. A few college libraries in Dhaka and other metropolitan cities have better collection and the extent of services may be comparable with recently established university libraries. But most of the college libraries especially out of metropolitan areas constitute one or two

shelves of books. Many of them are not operated by professional librarians even in many places there is no librarian at all. A teacher is responsible to handle the collection in these cases. In most cases the collections are not classified or cataloged. In some colleges books of the said library remains as a showpiece in chamber of principal. Besides this there are about 1150 high school libraries in Bangladesh.

2.4.2.4 Special/research libraries

The special libraries in Bangladesh are characterized as institutional libraries and the nature of collection and services are reflected according to information needs and financial abilities of the organizations. According to the official source of Library Association of Bangladesh (LAB) there are 665 special libraries in Bangladesh. This study finds many special libraries from the official directory of members of the LAB. According to the directory some important specialized libraries in the countries are: Atomic Energy Commission Library, Bangladesh National Museum Library, Bangladesh Institute of Development Studies (BIDS) Library, Bangladesh Rice Research Institute Library, Bangladesh Agricultural Research Council Library, Bangladesh Agricultural Development Corporation (BADC) Library, National Parliament Library, Bangladesh Jute Research Institute Library, Bangladesh Tea Research Institutes Library, Bangladesh Academy for Rural Development (BARD) Library, Bangladesh Sugarcane Research Institute Library, External Resource Division (ERD) Library, Bangladesh Bank Library, etc. Besides these commercial banks, mass media including radio, TV and newspapers agencies, cultural organizations, several ministries, Judiciary, bar councils and Jails, different associations and societies maintains libraries or information units.

Another important segment of special libraries is non-government organization (NGO) libraries and information centers and foreign mission libraries. According to NGO Affairs Bureau official sources more than three thousand NGOs are working in different sectors in Bangladesh. Most of the NGOs maintain library or information units at least at the head office. More

sophisticated library and information systems are maintained by foreign organizations. According to the Directory of International Organizations in Bangladesh, there are more than 13 international donor agencies, 17 UN organizations, 47 diplomatic missions in the country. A study conducted by Goethe Institute shows that most of these organizations maintain libraries/information units for different information supports and public relations of the parent organization/patron (Alam 2002:6-7). Modern information systems and services are characterized these libraries.

Art Institute library of Dhaka University is the largest Art library in Bangladesh. However, there are other four art institute libraries situated in the 4 divisional head quarters. There are also some big libraries in Dhaka city for the Shilpa Kala Academy (Fine Atrs Academy), Bangla Academy, Nazrul Institute, and Visshyo Sahityo Kendro which are pioneer in the field of literature and culture. According to the official source, the Visshyo Sahityo Kendro has mobile library project in the country. Besides there are 68 Shishu Academy library (Academy for Children) at the district level including Dhaka city are working with child literature (Office sources Bangladesh Shishu Academy). Bangladesh Public Administration Training Center (BPATC) library is playing the leading role in human resources development under the Ministry of Establishment. Besides there are 68 Youth Development training centers maintaining collection on self employment issues under Ministry of Youth and Sports. There are many special libraries and information centers have been established in the field of health, population and nutrition sector of the country. A brief discussion on these libraries and information centers has been given in chapter three.

2.4.3 Library Education

Library Science education was instituted in Bangladesh with a three-month certificate course in 1952 by the Dhaka University Library. From 1955 to 1959 four additional certificate courses were held with the assistance of US Education Foundation. A formal six-month certificate course on Library Science was launched in 1958 by the then East Pakistan Library Association

(EPLA) now The Library Association of Bangladesh (LAB) which was established in 1956 (Khan 1992:49). Dhaka University introduced Library Science education with a one-year postgraduate diploma course in 1959 (Ahmed 1987:102). Subsequently, the university authority established the Department of Library Science under the Faculty of Arts in 1962-63 session with the introduction of a one-year masters program.

In 1988, the department was renamed as 'Department of Library and Information Science' with the introduction of three years bachelor in Library and information science honors course and one year master's course. To conform with the international standard, Dhaka University introduced four years integrated honors courses in 1997. The department then restructured its curriculum giving more emphasis on Information Science issues and IT applications. Accordingly the Dhaka University authority renamed the department as "Department of Information Science and Library Management" in 2000."

In 1990, Rajshahi University established Department of Library and Information Science with a postgraduate diploma course. Rajshahi University is now offering four years honors course and a one-year master's program. Since 1998 the Library Association of Bangladesh (LAB), and subsequently other eight institutes of Library and Information Science are producing paraprofessionals and non-professional manpower providing Diploma and Certificate courses under the National University. Table 2.2 shows the courses, duration and concerned institution providing library education in Bangladesh.

Table 2.2: Courses and Institutions providing LIS education in Bangladesh

Courses	Duration	Institution
Bachelor of honors	Four years	Dhaka University, Rajshahi University
Masters	One year	Dhaka University, Rajshahi University
Post-graduate diploma	One year	Eight LIS institutes situated across the country
Certificate course	Six months	The Library Association of Bangladesh (LAB)
M.Phil.	Two years	Dhaka University
Ph.D.	Two to four Years	Dhaka University

Beside this, at the graduate pass level some colleges such as Lalmatia Women's College, Dhaka, Begum Sufia government College, Faridpur are teaching library and information science as a separate subject like other disciplines. In addition, some private universities e.g. Darul Ehsan University, Royal University have introduced diploma and masters degree programs recently.

2.5 Evolution of Health and Population Information System in Bangladesh

Information system is an integrated effort of collecting, recording, processing, analyzing and disseminating information and knowledge to influence policy-making, program action and research. It is also viewed as a user-machine system for providing information to support operations, management and decision-making functions in an organization (Davis and Olson 1984: 2). The health and population sector information in Bangladesh has undergone several changes and modifications over the last three decades since its inception. At present Ministry of Health and Family Welfare is maintaining hierarchical reporting system called MIS for assessing, evaluating and monitoring its health, nutrition and population sector programs.

2.5.1 Early history

Prior to the formal MIS, there existed no regular system for reporting on progress of the national health and population programs in Bangladesh but periodic evaluation on programmatic effects based on ad-hoc surveys and studies. In early 1975, a statistics compilation unit called 'Service Statistics Cell (SSC)' was founded for collection, aggregation and analysis of data essentially from the periphery and transmission of the same to the head quarters. In 1979, the scope of SSC was limited to a surveillance system in 40 thanas and was transferred to the newly created MIS (PDEU 1996: 1).

2.5.2 Inception of MIS

During the Third Five Year Plan period the concept of SSC was abandoned and its resources were placed under the new project titled "Strengthening of MIS unit' with a goal to develop MIS to be an effective management tool to aid decentralization of decision making at different levels. At the inception stage MIS operation, Couple Year of Protection (CYP) was used as the principal performance indicator. Subsequentially, Contraception Acceptance Rate was introduced in place of CYP as principal indicator of FP program performance.

The MIS unit was initially made responsible for establishing a regular system of data collection and analysis of performance statistics received from all over the country. Accordingly, MIS began to collect the service statistics on contraceptive service delivery, particularly distribution of oral pills, condoms and number of sterilizations performed and IUD inserted, and produce monthly report from the year 1980 (Choudhuri 1989: 5). The computer system of the program was installed in 1981. The MIS has established a hierarchical reporting system from the field level to district and on to the national headquarters for the use of different policy planners, decision-makers, donor agencies, researchers and other users.

In 1986 in response to the management of FP and MCH services Directorate of Family Planning initiated to expand the MIS program. In a workshop the directorate proposed a new information system that should satisfy the followings:

- Responsibility of record keeping should not be entrusted with the beneficiaries, but with service providers.

- Number of registers to be maintained at upazila level and below would be reduced from 44 to 12 and various reports (27) flowing up-wards would be replaced by one summary report for each level.

- Introduction of a village-based register to be used by FWA and HA. The register should contain longitudinal history of clients' behavior with respect to family planning, MCH and primary health care services.

- Each worker will keep the register for 2 weeks with him/her. During fortnightly meetings, she/he will hand over those to his/her counterpart.

- Traditional Birth Attendant (TBA) activities will be incorporated in the new information system.

- Feed-back reporting system would be ensured down to upazila level. The upazila will ensure feedback for grass-roots level workers through periodic meetings and discussions.

- Health education activities have bean included in the reporting system (NIPORT 1986: 26-27).

2.5.3 MIS during 1989-98

Up to 1989 different initiatives were taken to establish a regular system of data collection and reporting through Directorate of Family Planning (DFP) and Directorate General of Health Services (DGHS). Health and family planning services in each of the six administrative divisions of the country, covering 64 districts, and 460 thana and union levels, are provided through district hospitals, thana health complexes (THC), and maternal and child health-family planning (MCH-FP) centers. These outlets provide primary and curative health care, family planning and MCH services. In the service delivery system there are two categories of personnel: health staff and family planning staff who, in addition to providing services, also collect key information on Reproductive Health/Family Planning (RH/FP). The most peripheral service providers and data collectors are the Health Assistants in the Health Directorate and Family Welfare Assistants in the Family Planning Directorate. Under the vertical program of MIS, different types of recording

and reporting tools were designed to meet the data and information requirements. The details are as follows:

2.5.3.1 MIS under the Directorate of Family Planning

The MIS unit was an apex body of the national family planning program for compilation of service statistics related to Family Planning-Maternal and Child Health (FP-MCH). It was responsible for acquiring, operating and data management activities in respect of assessment of data needs for various users, statistical manipulation, tailoring, analysis, feedback, dissemination etc. During the period 1989 to 1998 for both family planning and MCH services, the reports were originated from the grass-root level field workers (FWA under Government program and field workers under NGO programs) and those engaged in providing clinical services. Under family planning Directorate several registers, rosters, cards and forms were used at various delivery points to record data and information relating to FP-MCH. In 1989, a uniform longitudinal client-oriented record keeping system titled "The Family Welfare Assistant Register" (FWA register) was introduced and was revised with new reporting formats and instruction manual in 1993 (PDEU 1996: 1-3). The data flow was as follows (PDEU 1996: 2-3):

- FWA used to collect data from the individual families/ eligible couples, record these in the registers and report to the Family Planning Inspector (FPI) at union level. NGO field workers collect data from the families/eligible couples record these in their registers and report to their supervisors with copies to FPI.

- FPIs and NGO supervisors send reports to Thana Family Planning Officers (TFPO).

- Family Welfare Visitors (FWV), Medical Assistant (MA) working at the FWC also record their performance in the clinic registers and sends report to TFPO. NGO paramedics report to their respective supervisors.

- TFPOs sends reports to DDFPs, and finally.

- DDFPs send report to MIS Unit, Dhaka

Different monthly and annual publications are produced on performance data and sent to district-level managers as a part of the feedback process, as well as to the national-level managers concerned and donor agencies. MIS reports are used mainly by the Ministry of Health and Family Welfare, the directorates and the donor agencies. However, MIS data are underutilized at the local level owing to a lack of knowledge of, and skills in, the interpretation and use of data and information for management decisions. Five different forms were being used in reporting:

i. Monthly report of FWA (Union level): MIS Form-1.
ii. Monthly progress report of FPI: MIS Form-2.
iii. Monthly progress report on FP-MCH activities (clinic level): MIS Forms-3.
iv. Monthly progress report of the thana/upazila on GoB, NGO and multi sectoral agencies on FP program (Thana level): MIS Form-4.
v. Monthly progress report on the district on the FP-MCH activities (District level): MIS Form-5.

2.5.3.2 MIS under the Directorate General of Health Services

The main MIS function was to collect, collate and analyze RH/FP program performance data. The data, which originate from grass-roots field workers up to the national level, are used to generate a variety of input, process and output indicators. The health MIS includes the following activities under different recording and reporting tools: A general register was used by the Health Assistant to record daily activities including information on diseases, treatment given and other action taken during daily visits. An expanded program on immunization register for children aged less than one year contained their immunization status. The 15-49 year women's age group register was used to determine target numbers for tetanus immunization. An

expanded program on immunization tally sheet is used to record children and pregnant women receiving antigens, vaccinations, vitamin supplement and other related services.

Several forms were also used for recording various types of information. A daily disease record form was used to record information on six specified diseases for weekly compilation. An oral rehydration therapy (ORT) communication campaign form was used to record the number and attendance of ORT communication meetings held by Health Assistants. An acute respiratory infection (ARI) case record and referral form records and reports on the diagnosis and treatment of ARI patients aged under five years, while an ARI referral slip was used to refer such patients to THCs. Birth and death lists, which were maintained during regular visits, contained important information like sex, age at death and cause of death. A geographical reconnaissance form was used during reconnaissance rounds to collect information on individual households and public utilities such as educational and religious institutions, markets etc. The daily geographical reconnaissance form was used to consolidate data during the annual updating round by date and area. A daily primary health care (PHC) activities compilation form was used to record all PHC-related activities of Health Assistants.

Many reports were also prepared, such as the blood-slide collection report on identified fever cases. In addition, monthly reports on drug distribution, ORT and results, sanitation and the expanded program on immunization were prepared. Different monthly and annual publications are produced on performance data and sent to district-level managers as a part of the feedback process, as well as to the national-level managers concerned and donor agencies. MIS reports are used mainly by the Ministry of Health and Family Welfare, the directorates and the donor agencies. However, MIS data are underutilized at the local level owing to a lack of knowledge of, and skills in, the interpretation and use of data and information for management decisions.

During a survey carried out by MIS professionals in one of the districts, an assessment was made of the types of services provided under RH/FP as well

as the existing recording and reporting tools. The findings indicated that data were being collected in the field from 145 types of MCH-FP and RH care services. According to a study, data were gleaned at the field level from 145 types of MCH-FP and RH care services using 45 registers, 17 cards. In addition, 26 types of reporting forms were being used by the different offices and service delivery points in the public, NGO and private sectors (Ahmed, Tofayel 1999: 2). The data made it possible to generate indicators such as the contraceptive acceptance rate, the method-mix of contraceptive acceptors, percentages of births attended by trained health personnel, pregnant women receiving antenatal and post-natal care, and service delivery points (SDPs) with a three-month supply of contraceptives.

2.5.3.3 Limitations of the MIS

As indicated above, a large number of tools and instruments are used to collect and compile data for the MIS of the Directorates of Health and Family Planning. In addition, coordination between the various agencies involved in data collection is lacking, which often leads to limited use of the data in program planning and monitoring, and duplication of MCH services by the Directorates of Health and Family Planning. To remark on the limitations Ahmed (1999) said 'it is clear that the health and family planning service providers carry a huge burden, not only in providing the services but also in completing and maintaining the enormous quantities and varieties of forms. The result is a reduction of efficiency in service provision and data collection." In a study PDEU explored that a variety of inconsistencies in FP-MCH MIS systems in terms of coverage, recording, organization and utilization of data. The study also cited some study findings which indicated substantial amount of data inconsistencies. As for example they cited that while the use of pill was 30.1% according to FWA register, it was found to be 21.5% according to URC,B study and 17.4% according to BDHS 94 (PDEU 1996: ix-xii, 2-3).

2.5.4 Unified Management Information System (UMIS) in HPSP

In July 1998, as a consequence of the reform and remodeling of FP and health services, HPSP has recognized a unified MIS as one of the essential support services. In the log-frame it has been defined as "Unified, sector-wide, need based data system able to collect, analyze and use data for planning and management purposes at relevant level." At the central level a Line Director (LD) for MIS with the technical supports from four/five program/system managers would functionalize the unified MIS. To ensure technical compatibility it was proposed that each sub-system would be attached to and managed by the functional units it serves. (MOHFW 1998: 42). The five sub-systems were:

1. Service/performance MIS with ESP and hospital
2. Logistic management (LMIS)
3. Personnel management (LMIS)
4. Financial management (FMIS)
5. Epidemiological surveillance (EMIS)

The major components of the UMIS were:

i. Examination of the database and formats and print and distribute a common worker register for FWA and HA.
ii. Develop and integrate MIS sub-systems (sector wise).
iii. Develop personnel MIS.
iv. Develop and organize MIS and epidemiological surveillance system.
v. Introduce modern computer technology in different functions of service delivery.
vi. Establish database.
vii. Establishment of CMIS.
viii. Setup operation.
ix. Introduce data validation and error check.
x. Introduce rapid survey on status service at the end of the year.
xi. Basic orientation of fresh recruits and refresher training.
xii. Documentation (publish MIS newsletter) manuals, forms, procedures, etc.

The set of indicators proposed by the ESCAP (Economic and Social Commission for Asia and Pacific) was given due consideration in finalizing the set of indicators for UMIS. In addition, a set of new performance indicators was agreed on that covered the components of an essential service package with key recording and reporting instruments to be used at the community, union, thana and district service delivery facilities. The data collection system comprised a set of nine types of forms, registers, slips and cards.

During implementation period of HPSP (1998-2003) MOHFW worked with the Operation Research Project (ORP) of the ICDDR,B Center for Health and Population Research to design and finalize the new record keeping and reporting system. In the pilot project, UMIS tools were designed and implemented in 22 upazila of two districts. Intensive monitoring was carried out to identify data accuracy and make the system user friendly. Several studies were conducted to assess the status and use of the UMIS at the union, upazila, district and community levels. Most of the studies reported a lot of inconsistencies in data recording and reporting format in terms of coverage, capturing, coding, transmission, analysis, and reporting. According to DGFP, FP program under HPSP was an unsuccessful attempt: "Unfortunately, the family planning program during HPSP under the unified structure at the upazila and below level contributed to a loss of momentum in RH-FP service delivery, and the program became almost paralyzed. However, the government upon review, decided in January 2003 to reestablish separate organizational structures and authority for health and family planning as they existed before July 1998. (Directorate of Family Planning 2006: 3). The extended and new structure of health and population sector program is HNPSP.

2.5.5 Information System in HNPSP (2003-06)

Health, Nutrition and Population Sector Program (HNPSP) is running under Strategic Investment Plan 2003-2010 through a sector wide approach. Within HNPSP MIS is functioning under two separate streams independently: MIS of DGHS and MIS unit of DGFP. FP MIS have reintroduced the FWA register

and house visitation by the FWAs and started publishing monthly report of performance of RH, FP-MCH as before 5 years in 1998. Mean while DGHS MIS has installed its server and expecting to communicate soon with 64 civil surgeon offices and 13 medical college hospitals. The directorate has also designed and makes the forms available online.

In the past information systems related activities were not given due attention in the health and population program in Bangladesh. According to different literature it is evident that former MIS programs of the Directorate General of Health Services and Directorate of Family Planning up to 1998 was ended due to a lot of inconsistencies including narrow coverage, errors in data capturing, forms and procedures, reporting, duplication of efforts, lack of co-ordination and control among the field workers etc. Next initiative for establishing Unified MIS that has aimed at eliminating the former inconsistencies and broadening its scope with programmatic needs of HPSP has also been paralyzed with ending of HPSP project in 2003. Now the scope health and population program has widened further and has included national nutrition program with in the framework of HNPSP. Though HNPSP MIS is functioning as before 1998 under two separate streams independently: MIS of DGHS and MIS unit of DGFP, no serious initiative has been taken yet to check the validity and workability of the reintroduced FWA register and other forms and procedures' at the field levels. The system has yet not been able to eliminate the inconsistencies as they were before 1998 and to include nutrition sector information and concerned reporting activities though this project has ended in June 2006. However, the demand for such activities will be much higher than in the past due mainly to the following reasons:

i. Broadening the scope of health and population sector services under ESP and hospital services.
ii. Inclusion of nutrition sector programs and two other functional units (The Directorate of Drug Administration and The Directorate of Nursing Services) in the current MIS program.
iii. Successful implementation of sector-wide management (SWM).

iv. Lack of system to ensure free flow of information among HNPSP implementation units and other research institutes.

2.6 Conclusion

According to WHO (2006: 7) guidelines information obtainable through a Health and Population Information System (HPIS) may be usefully categorized into the some interrelated and possibly overlapping sub-systems: Epidemiological surveillance (e.g. disease case and outbreak notifications); Service records and reporting (from community health workers and health care delivery facilities); Program monitoring and evaluation (for example, specific for TB, MCH/FP, EPI, etc.); Administration and resource management information systems (e.g. budget, personnel, logistics, etc.); Vital registration (e.g. births and deaths). But the existing structure of the health and population sector information system does not cover all these aspects; rather it has attempted to include the service statistics from different service delivery points in the health and family planning programs. An attempt has been made to include logistics management, personnel management, financial management, epidemiological surveillance data system in the earlier UMIS. Ultimately those efforts have been terminated without any fruitful end. The necessity of a knowledge-base for the research and decision support in the said sector is still a outside issue. Not only that practicing librarians and information centers have no functional relationship with the MIS systems. An attempt has been made in the study to design an integrated information system in which integrated MIS and libraries will work under the same umbrella. It will specially focus upon the inconsistency between users' demand and provision of existing information services. To ensure free flow of information the research will try to assess the technological needs of the information systems for computer based data storage, retrieval and transfer among functional units especially working at thana and above.

Chapter 3

Findings of the Survey- I

Library and Information Centers

Chapter outline

Findings of the Survey- I

Library and Information Centers

3.1 Introduction

There is no institutional statistics supporting the actual number of libraries and information centers in the health, population and nutrition sector in Bangladesh. However an unpublished Ph.D. thesis has mentioned that there are 65 health science libraries in Bangladesh (Mannan 1997: 197). It is evident that Ministry of Health and Family Welfare (MOHFW), its directorates and many supporting institutions maintain library or information unit. Divisional head quarters and district health and family planning offices have small statistical compilation unit for MIS purpose but they have no formal library or information section. Though the Directorate General of Health Services has no formal library, there are many libraries in health education and research sector. The number of libraries in the nutrition sector is not so insignificant. Besides the government, some International organizations have developed well equipped libraries and information centers in the field of health and population sector. Some NGOs working in the field of health, population and nutrition sectors maintain research and information unit.

Since 1953 with the establishment of Family Planning Association of Bangladesh (FPAB) Documentation Center, a large number of libraries and information centers are working as a supporting component to the national family planning and other population related programs. Some other notable libraries are: Directorate of Family Planning Library (1980) , Association of Voluntary Surgical Contraception (AVSC) subsequently renamed as "Engender Health" library (1978), Bangladesh National population Information Service Library (1981), Family Planning Services and Training Centers (FPSTC) subsequently renamed as Population Services and Training Center (PSTC) library (1979), National Institute of Population research and Training (NIPORT) Library and Information Services (1976), etc.

According to government sources, beside the Bangabandhu Sheikh Mujib Medical University (BSMMU) Library and the National Health Library and Documentation Center (NHLDC), there are 14 government and 16 non-government medical college libraries in Bangladesh (BBS 2006: 349). Some major medical college libraries in the country with their date of establishment are: Dhaka Medical College Library (1946), Sir Salimullah Medical College Library (1972), Chittagong Medical College Library (1958), Bangladesh College of Physicians and Surgeons Library (1972), Bangladesh Medical College Library (1986), Bogra Medical College Library (1976), Dhaka Dental College Library (1961), Dinajpur Medical College Library (1992), Faridpur Medical College Library (1976), Government Homeopathic Degree College Library (1989), Government Unani and Ayurvedic Degree College (1989), Khulna Medical College Library (1992), Mymensingh Medical College Library (1962), Rajshahi Medical College Library (1958), Rangpur Medical College (1970), Sher-e-Bangla Medical College, Barisal (1968), Sylhet MAG Osmani Medical College Library (1962).

In addition to the medical colleges there are several health institute libraries in the country. These include National Institute of Cardiovascular Disease and Hospital (1963), National Institute of Ophthalmology Library (1979), National Institute of Preventive and Social Medicine (NIPSOM) Library (1976), Rehabilitation Institute and Hospital for Disabled Library (!978), Armed Forces Medical Institute library (1975), Bangladesh Institute of Child Health Library (1983), Cancer Institute and Research Hospital Library (1982), Dhaka National Medical Institute Hospital Library (1925), Institute of the Disease of the Chest and Hospital Library (1955), Institute of Health Technology, Dhaka (1963), Institute of Health Technology, Rajshahi (1967), Institute of Nuclear Medicine (1980), Leprosy Control Institute and Hospital Library. Besides the medical institutes, there are 13 Medical Assistant Training Schools (MATS) across the country that maintains medium/small size libraries (NHLDC 1992: 1-42). The location and their year of establishment are: Bagerhat (1976), Chapai Nawabnganj (1980), Comilla (1980), Faridpur (1976), Jamalpur (1980), Magura (1980), Maijdee Court (1976), Thakurgaon (1980), Kushtia

(1976), Noakhali (1976), Sirajgonj (1979) Tangail (1979). There is also a Paramedics medical Institute library (1963) and a Nursing College Library (1970) in Bangladesh.

Recently the government has given more emphasis on the nutrition sector as core component of the health and population sector programs in the country. There are several libraries in the country that have special focus on nutrition. Some major libraries in the sector are cited below with the date of establishment: National Institute of Public Health and Nutrition (NIPHN) Library (1982), Bangladesh National Nutrition Council Library (1975), Institute of Nutrition and Food Sciences, Dhaka University Library (1969), Children's Nutrition Unit Library (1974).

Some professional associations also maintain libraries and information centers in the sector. These are: Bangladesh Medical Association Library (1971), National Tuberculosis Association of Bangladesh Library (1976), Voluntary Health Services Society (VHSS) Library, Bangladesh Association for Voluntary Sterilization Library (1978) etc. Concerned educational institutes such as Department of Population Sciences, Institute of Health Economics, Institute of Nutrition and Food Sciences of Dhaka University, and Bangladesh College of Home Economics maintain well equipped libraries.

It is believed that 29 homeopathic medical colleges, 13 physical training colleges, and a very few of the 2823 hospitals maintain small size libraries or documentation or information unit. Some notable hospital libraries are: BIRDEM Library (1956), Holy Family Red Crescent College Hospital Library (1953), Mental Hospital Reference Library, Pabna (1966), Infectious Disease Hospital Library (1980). According to some pharmacologists it is also believed that the study or research cell of 233 pharmaceutical industries, 81 homeopathic medicine production firms and 501 unani and ayurvedic medicine production firms may maintain small library or information section. Some international organizations working in the field of health and population are maintaining modern library and information systems such as Library and

Information Service Unit (LISU) of ICDDR,B (1978), United Nations Fund for Population Activities (UNFPA) library (1969), United Nations International Children's Emergency Fund (UNICEF) library (1946), etc.

There is no reliable literature on the real situation of libraries in this sector. However, the survey data show that the collection of the libraries and information centers in this sector ranges from a few hundred to a few thousands. The manual procedure of librarianship and traditional service pattern is the common scenario in most of the libraries. Most of the libraries have just initiated introduction of technological facilities. Of course a few sample libraries maintain balanced collection and equipped with modern ICT facilities and maintain minimum service standard. Due to lack of reliable literature, the real situation e.g. the nature of their collection, organization and management of the libraries, services, infrastructural and ICT facilities, information access and retrieval tools and techniques etc. still remain unexplored. In fact there is no inter-sectoral library network in the field of health, population and nutrition field. However, an unpublished PhD thesis has mentioned that there are 65 health science libraries in Bangladesh and 51 of them are members of health Information network under NHLDC as focal point (Mannan 1997: 90). But after 1998 there is no information in this field. No initiative has yet been taken for knowledge management in the concerned sector institutions or even to learn the users' information needs and unmet needs. So for the betterment of the Research and Development (RD) in the Health, Nutrition and Population Sector Program there is an urgent necessity for a need based design of its library and information systems.

3.2 Overview of the sample libraries

3.2.1 Bangabandhu Sheikh Mujib Medical University Library

Introduction: Bangabandhu Sheikh Mujib Medical University (BSMMU) is the premier postgraduate institution of the country and bears the heritage of Institute of Post-Graduate Medicine and Research (IPGMR) established in December 1965. For expanding higher medical education, the Government of the Peoples' Republic of Bangladesh has upgraded the IPGMR in to medical university which has been named as "Bangabandhu Sheikh Mujib Medical University" (BSMMU) by the Act (No. 1, 1998) of parliament. The academic library of BSMMU is known as BSMMU Central Library located at the 4th and 5th floor of "A" Block building, Shahbag, Dhaka 1000 having approximately 22800 sqft floor space (BSMMU 2006: 2).

Library resources: The library collection consists of over 23300 volumes of books covering the core subject and allied areas of interest housed at the 4th and 5th floor arranged according to NLM class number. The library subscribes and receives as donation around 73 local and 134 foreign journals arranged alphabetically on the selves. The library is preserving 4505 volumes of bound volumes of back issues. The library maintains a reference section containing several encyclopedias, different types of dictionaries, handbooks, manuals, almanacs etc. The library preserves BSMMU publications, thesis and research reports produced by the internal researchers as well as the donated items. The library is also working as the depository library of the World Health Organization (WHO) and hold 666 copies of WHO and UN publications.

Services: The BSMMU central library has a well furnished reading area that can accommodate over 750 users at a time. On an average 1200 users of different categories enjoy the services from 9 AM to 10 PM on all working days. The library provides book loan and photo copy facilities. The library also provides reading list and short bibliographies and CDROM search facilities on request. In anticipation of demand the library has started periodical indexing and news clipping services.

ICT facilities: The library has ten multimedia computers with Internet facilities. The library is using library management software named "Library Management System" (LMS) for the maintenance of bibliographic database. Soon they are going to introduce digital ID card for user and computerized circulation system. The user can access and use of Internet resources from the library by subscribing a special type of membership at the cost of Tk500 for six months.

At present seven professional and eighteen non-professional workers are trying to satisfy the users by rendering need oriented services. The next plan for digital librarianship may make the library more prospective for its users if the library gets necessary approval, fund support and technical assistance.

3.2.2 ICDDR,B Library and Information Services Unit (LISU)

Introduction: ICDDR,B was established in 1978 as successor to the Cholera Research Laboratory created in 1960 to study the epidemiology, treatment, and prevention of cholera. The Centre is an independent, international, non-profit organization for research, education, training, clinical services, and information dissemination. The Centre is the only truly international health research institution based in a developing country. The results of research conducted over the years at the Centre provide guidelines for policy-makers, implementing agencies, and health professionals in Bangladesh and around the globe. Researchers at the centre have made major scientific achievements in diarrhoeal disease control, maternal and child health, nutrition, and population sciences. These significant contributions have been recognized worldwide. The broad aims and objectives of LISU are to: (a) collect, process, store, and disseminate information, (b) encourage use and flow of information, (c) help promote appropriate research work, and reduce duplication, and (d) optimize the application of improved practices for

information storage, retrieval, publication, and dissemination--all concerned with the issues relating to health, nutrition, and population.

Library resources: LISU is well known as one of the most up to date information center in the field of health, population and nutrition sector. This library is useful for its internal publications and a wide range of recent international books and periodicals. According to the official accession register the total collection is around 42500 Including 9320 books, 812 reference collections, 4452 ICDDR,B publications and 4049 bound journals. The library is also equipped with electronic resources. The number of its e-journal issues is around 6000 and there are 150 CD-ROM literatures.

Services: Within its broad aims, objectives and mission and with the support of 6 staff members, LISU has actively been pursuing to develop and offer effective and efficient information services, disseminate the Center's research findings, to improve the information-support system. The specialty of LISU services is its duel mode of accessibility to its resources (both online and manual). The library catalog can be accessed by card catalog or by in-house bibliographic database or through Internet. The library offers SDI and selective circulation services. Besides the bibliographic database the library offers full text document delivery system through its own web server. Users enjoy in-house searching and web searching facilities from the library.

ICT Facilities: In fact, LISU maintains a modern library and information centre equipped with the most advanced tools of the new information technology and equipment for the storage, retrieval, and dissemination of information. LISU maintains their won web server and provides down loading facilitates of the Center's research findings, journals articles, etc. It maintains complete bibliographical database and provides wide range of searching facilities both at the reference desk and on the Internet. The library is running by 8 skilled manpower in which five are professional and three are non-professional staff.

3.2.3 National Health Library and Documentation Center (NHLDC)

Introduction: NHLDC of Directorate General of Health Services, Ministry of Health and Family Welfare is the National Health Library in Bangladesh. With the help of the Asia Foundation, it was established in 1974 and now is functioning in its own building at Mohakhali, Dhaka 1212. The aim of this Library is to cope with the increasing rate of publication on health science and medical literature and to fulfill the demand of the health scientists and medical professionals of the country. The 10000 sqft space of the library building is properly decorated for 100 seated reading hall-room, circulation counter, stacks room and administrative spaces. Around 34 employees are working from 8:00 AM to 8:00 PM on the government working days.

Library resources: The library maintains a reasonable extent a well balanced collection of books, journals, current subscriptions and audio-visual teaching and research materials in the field. It also acts as a depository library of bio-medical literature published in the country and compile national bibliography of these literatures. It also serves as the apex body for bio-medical information network within the country for sharing resources and further linked the country with the health literature. The library occasionally receives local and foreign books, journals and other document from national and international institutions as donation/gift/complements. The collection of the library consists of around 17000 books and monographs, 15000 bound journals and 241 current journals.

Services: A wide range of circulation, inter-library-loan, reference and bibliographical services are available in the library. Students, faculty members, researchers and physicians of health science institutes can borrow books for a certain period of time. Beside short-range and long-range reference answer the library is trying to offer expert guidance to readers. Different categories of CAS and photo copy services are available in the library. In response to specific request by the users, the library compiles short

bibliographies and reading lists. The library sends its list of new arrivals to the selected health science institutes in the country. The library also offers Internet access CD-ROM searching and SDI services at a limited scale.

Library co-operation and networking: The library has been declared as National Focal Point of the Health Literature Library and Information Services (HeLLIS) network of WHO (NHLDC 1991: 23-4). Under this network the library is to do the following activities:

i. Procure photocopy/softcopy of journal articles for the users available at online or offline.
ii. Indexing locally published health science current literature and producing national bibliography of health literature.
iii. Preparing union list of periodical holding of libraries participating in the network.
iv. Providing manual response through literature searches on MEDLINE database on CD-ROMs available in the library.
v. Producing audio-visual media for instructional and research purposes.
vi. Document delivery among the HeLLIS members as resource sharing activity.
vii. Preparing directories of health science libraries and librarians.
viii. Identification and preparation of list of books for individual health users and libraries.
ix. Cooperative acquisition and central processing of library materials and distribution to the participating libraries in the network.
x. Continuing education for the librarians participating in the network and for the users of network services.

ICT Facilities

The library has 6 PCs with printer and Internet facilities. In the past the library initiated to build their bibliographical database using CDS/ISIS. Very recently they are trying to prepare web based data base using MySQL and PHP. As national health library the NHLDC can play important role in accumulating,

processing, preserving and disseminating related literature in the health, population and nutrition sector in Bangladesh. Though there are many written provisions, it should try to materialize the things. The total manpower of the library is 34 in which 11 are professional and 23 are non-professional.

3.2.4 National Institute of Population Research and Training Library and Information Services (NLIS)

Introduction: The NIPORT Library and Information Service (NLIS) unit is a part of the integrated Information System of the National Institute of Population Research and Training (NIPORT). NLIS was founded in 1976 with the inception of NIPORT. Since establishment to 1985, NLIS had been working as a special library that was used to collect and provide documents on population and family planning to the members of NIPORT faculty only. In 1985 Maternal Child Health (MCH) was added as a component of family planning and the coverage of NIPORT library was extended to the aspects of health, nutrition, sanitation, women empowerment, AIDS and STD, disability etc. It added documentation and information services which have extended utilization of NLIS by the users outside NIPORT. NLIS receives financial and technical support from German Agency for Technical Cooperation (GTZ). The main objective of NLIS is to collect and disseminate world wide information on population, maternal child health (MCH) and family planning with more detailed information about Bangladesh. It provides information to individuals and organizations in the country and abroad in response to request.

Library resources: The NLIS contains more than 7500 books, reports and other information resources in which over 4000 are in population and MCH of Bangladesh. It subscribes 30 world leading journals and receives many national and international journals and newsletters on population and related issues. The library is also working an archive of NIPORT faculty publications, manuals, reports and vertical files. The library is also a workstation for the POPIN (Population Information Network). Thus, it has the accessibility to the

POPLINE CD-ROM literature and the provision for searching the world published and unpublished literature on population and allied subjects available online through the network. The library also holds some video collection together with necessary accessories on FP, IEC and MCH.

Services: NLIS offers mainly the following services:

i. Reading room services and limited scale circulation/borrowing facilities to NIPORT staff.
ii. Reference services including the preparation of reading list, short bibliographies.
iii. Referral services to different national and international library and information centers.
iv. Reprographic services that includes photocopying facilities only.
v. News clipping services.

ICT facilities

The library holds two PCs and printer. These computers are used mainly for maintaining bibliographical database of the collections and some other official purpose. The library has no Internet facilities. This is running by two professional and three non-professional staff where the chief librarian is a non-professional.

Publications: NLIS provides information mainly in two different ways- through serial and occasional publications and direct contact with clients (NIPORT 2000: 2).

i. NIPORT Barta (Quarterly in Bangla)
ii. Current awareness bulletin (monthly)
iii. Press clipping bulletin (monthly)
iv. Annotated bibliography on population, MCH and family planning in Bangladesh (single issue in every 2 years)
v. Directory of MCH-FP professionals
vi. Proceedings of different seminar workshop (occasionally).

3.2.5 Bangladesh Institute of Research and Rehabilitation in Diabetes, Endocrine and Metabolic Disorders (BIRDEM) Library

Introduction: Bangladesh Institute of Research and Rehabilitation in Diabetes, Endocrine and Metabolic Disorders (BIRDEM) library was established in 1956 with the establishment of Diabetic Association of Bangladesh. It is situated with 5200 sqft area on the 2nd floor of Ibrahim Memorial Diabetes Center, Shahbag, Dhaka 1000. The library is open with its 50 seating capacity on the working days from 7:30 AM to 9:00 PM.

Library resources: The total learning resources of the library is about 8100 in which include 6324 books and monographs and 500 reference collections. The library subscribes 40 local, 62 international journals and 8 daily news papers. The library also preserves the back issues of the journals as bound volumes which are now about 1747 in number. As resource access tool, the library use both manual and bibliographic database. It uses NLM classification scheme.

Services: Beside the reading room services the library offers circulation facilities for its users. The library has no provision for indexing or abstracting services. The library maintains regsister for incoming users. The library also provides photocopy facilities for the users.

ICT facilities: The library has four computers and maintain bibliographical database using WINISIS software. The library provides Internet browsing facilities. It holds the MEDLINE and POPLINE CD-ROM literature. User can search the CD-ROMs and can copy necessary information. The library has a free access agreement to the journal articles with "PubMed"- search engine on medical resources- on the Internet. The number of total manpower in the library is 11 including five professional and six non-professional staff.

3.2.6 Dhaka Medical College Library

Introduction: Dhaka Medical College is the largest as well as oldest medical college in Bangladesh. It was established in 1946. The library shares around 4200 sqft area on the 3rd floor of the college building. The library is open for the students and faculty members from 8:00 to 2:30 P.M.

Library resources: The library holds about 40000 text and reference books. The number of journal subscription is 12 and it preserves around 650 bound volumes of back issues.

Services: The library provides wide range of loan facilities for the students as well as reading room facilities. Other services are hampered due to acute lack of professional staff.

ICT facilities: The library has no information technology facilities.

Staff and administration: Up to December 2006 the library was operated by two non-professional staff who were the peons of the library. For the sake of protecting its valuable library resources and smooth functioning of the library administration must take immediate step to recruit adequate number of professional staff and necessary fund supports. The library materials are organized according to traditional manual cataloging by non-professional staff.

3.2.7 Directorate of Family Planning Library

Introduction: Directorate of Family Planning maintains a small library and documentation center which is coordinated by the line director of Information Education and Motivation (IEM) Unit. The library is housed in a single room of the Population Building, Azimpur, Dhaka. The prime objective of the library is to preserve and disseminate the documents relating to family planning

programs and services. The library is open on the working day from 9:00 AM to 2:30 PM.

Library resources: The library holds around 3000 internal publications including family planning methods and manuals, reports on FP programs, evaluation etc. The library preserves a good number of news clippings. Irregularly, the library subscribes 16 journals and receives some free periodical publications.

Services: Actually there is no library service available in the library but during visit to the library it was observed that some people are gossiping and reading newspapers.

ICT facilities: Not available

Library staff and administration: The publications are stored in the almirah without any processing. Even the library has no accession register. There is no professional librarian in the library. A Thana Family Planning Officer (TFPO) has been assigned in-charge of the library. During field visit, the dusty books shelves are found open and a long table with some chairs is busy with newspaper reading and gossiping by the office staff. The MIS of Family Planning and the library may play important role in the total solution of information aspects of the national population programs in Bangladesh.

3.2.8 Institute of Nutrition and Food Science (INFS) Library

Introduction: Institute of Nutrition and Food Science library was established in 1969. Being an academic library, it is housed at the 3rd floor of the institute building, in the Dhaka University campus. It is located in between some yards of the Dhaka University Science Library and Bangla Academy library. The library is open mainly for the students and faculty members of the institute from 9:00 AM to 4:30 PM.

Library resource: According to the accession register, the library holds near about 7000 books and monographs and 1500 bound volumes of journals. The library regularly subscribes 13 journals and receives some books and periodical publication irregularly. The library maintains manual accessioning and card catalog system. The books are arranged in DDC classified order.

Services: The stack area is open for the users. Besides reading room facilities the users enjoy book borrowing facilities. As per the university policy each student can issue two books for two weeks and the faculty members can issue ten publications except the rare and reference collection for four weeks. There is no separate reference section in the library but some reference books such as encyclopedia, dictionary and yearbooks are available.

ICT facilities: The library has no computing facilities though the institute office has computers with Internet access facilities. The library is being operated by two professional and three non-professional staff.

3.2.9 Institute of Public Health and Nutrition Library

Introduction: Institute of Public Health and Nutrition library was established in 1982. It is situated at the ground floor in institute building at Mohakhali Health Complex, Dhaka 1212. The library is actually a single room of 800 sqft area. The library is open from 9:00 AM to 2:30 PM on the government working days.

Library resources: According to the oral report of the library-in-charge there are about five hundred books in the library resides under lock and key around the room. Books are arranged on the shelves according to NLM classified order. It is interesting to note that according to survey conducted in 1990 it was reported that the IPHN library hold more than 600 books and journals (NHLDC 1992: 39). It is most likely that the IPHN library is the only library

whose collection has been decreasing gradually when they receive Tk 50000 per annum for purchasing books.

Services: The reading space of the library has been designed like a conference room: a big oval shape table with some chairs. The library services are confined with newspaper reading and selective circulation to some higher staff. According to the librarian, the library is basically used for meeting purpose of the organization. The institute has a photo copier and can be used for the library purpose.

ICT facilities: No ICT facility is available. One professional and a non-professional staff are responsible for maintenance of the library.

3.2.10 Ministry of Health and Family Welfare Library

Introduction: Ministry of Health and Family Welfare (MOHFW) library was established in 1980. The library is situated in a single room of the ministry at the Bangladesh Secretariat. The primary objective of the library is to work as repository of MOHFW and to serve as a reference center to the concerned government officials. The library is open from 9:00 AM to 4:30 PM on the government working days.

Library resources: The library holds 11720 books and reports and other government publications. The library subscribes two daily newspapers and receives some periodicals free of cost. The library also holds some reference books including maps, Bangladesh Gazette etc. The collections are organized by dictionary card catalog and shelved are arranged according to DDC Class number. There is a computer and a photo copier in the library for official purpose.

Services: Employees of MOHFW and researchers working in the field of health and population are the main user group of the library. Besides the small reading room facilities, the library provides borrowing to government

officials at a limited scale. Though the library is in the central position of the health and population activities, it contributes a little to the sector.

ICT facilities: The library holds a computer with printer for official use only. There are two professional and three non-professional staff working in the library.

3.2.11 National Institute of Preventive and Social Medicine (NIPSOM) library

Introduction: NIPSOM library was established in 1976 situated at the Mohakhali health complex, Dhaka 1212. As an academic library of the National Institute of Preventive and Social Medicine, it is responsible for meeting curriculum needs of its post-graduate programs and services. The library occupies about 2000 sqft space on the 1st floor of the NIPSOM building. The library is open from 8:00 AM to 8:30 PM except Friday and other government holidays.

Library resources: The library holds around 7000 collection including text and reference books, reports, thesis papers, manuals and some reference collections including "Index Medicus". It also subscribes 20 journals and receives another 20 titles sponsored by the WHO. The library also preserves the back issues of the journals which are now around 250 volumes in number.

Services: Around 70 faculty members and the students are enjoying open shelf accessibility in the library. Besides the reading room services they are privileged with photocopying and circulation services. Though this library has been treated as a mid-tire resource library of HALLIS national hierarchical network, no actual work pertaining to the program found during visit to the library.

ICT facilities: The library has three computers with Internet facilities. The library maintains card catalog and NLM classification scheme for organization of resources. The progress of computerization of library activities is still in stagnant position due to lack of proper initiative and expert manpower. Including the chief librarian, the number of total non-professional staff is 5. There is also a professional worker in the library.

3.2.12 Department of Population Sciences Library

Introduction: The seminar library of the Department of Population Sciences, Dhaka University was established in 1998. It housed in a single room of the department at 3rd floor of Kala Bhaban, Dhaka University. Being an academic library its objective is to provide all sorts of information supports in line with the departmental curriculum. The library is open on every working day from 9:30 AM to 9:00 PM.

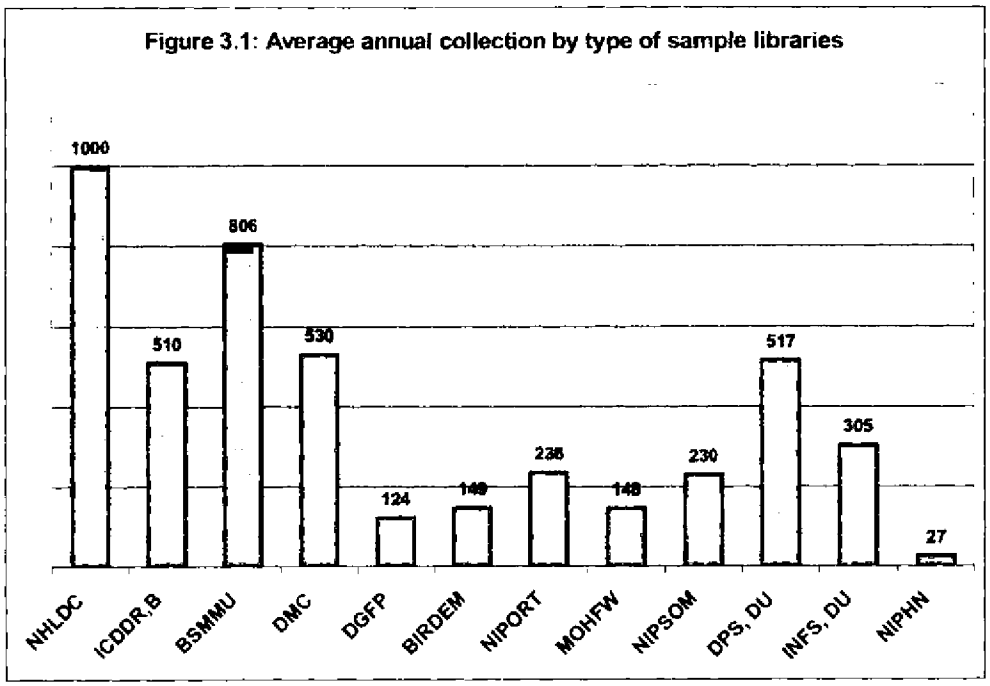
Library resources: The total collection of the library is near about 5000 which includes text and reference books, 15 titles of journals, news papers etc. The library maintains bibliographical database and there is no card catalog system. Shelves are arranged in accordance with the DDC class number.

Services: Library services mainly confined with in reading room and reference services. The students and faculty members can use the photo copier of the department as and when needed.

ICT facilities: The library maintains its bibliographical record with a single computer. The department maintains full fledged computer lab with broadband Internet connection. This library is in acute shortage of manpower. Only one professional librarian has to lead it from morning to night.

3.3 Nature of collection

The collection status in the health and population sector libraries is not encouraging at all. The total collection in the sample libraries ranges from a few hundred to a few thousand. The study shows that the top three libraries in terms of collection are Bangabandhu Sheikh Mujib Medical University Central Library (33047), National Health Library and Documentation Center (31996), and Library and Information Service Unit of ICDDR,B (14293).



Source: Survey data

On the other hand, the lowest level of collection are in National Institute of Public Health and Nutrition Library (649), Directorate of Family Planning Library (3231) and Ministry of Health and Family Welfare Library (3836). It is interesting to note that most of the libraries having lower range of collections e.g. NIPHN, DGFP, MOHFW, NIPSOM, NIPORT are of government institutions. The figure 3.1 shows that 58.3% libraries can collect only 50 to 250 publications; while 25% libraries can collect 500 and 16.6% can purchase about 800 to 1000 books annually. The collection is limited within a few hundred in most of the libraries outside the sample area. Table 3.1 shows that

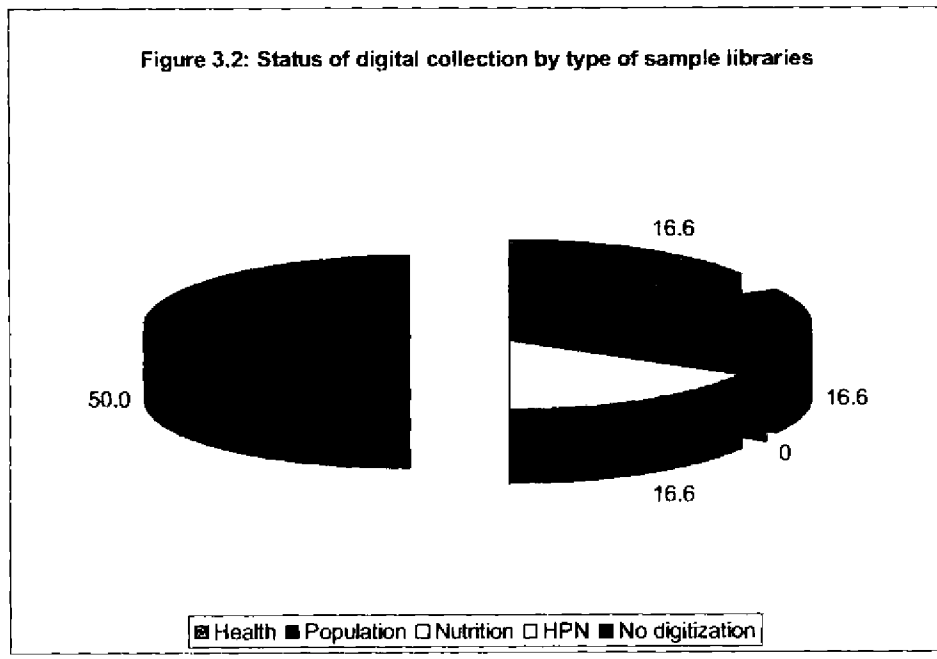
in collection development most of the libraries especially the academic libraries have given emphasis on text books and monographs. Reference and information desk is one of the most important aspects of library services. For the research purpose some of the libraries have paid due attention in subscribing national and international journals and most of them preserve back issues of the journals as bound volumes. Academic libraries having research orientation to the parent body, preserve different types of research reports including MPhil and PhD theses, project report, etc. All the sample libraries subscribe newspapers and some of them preserve clippings in their respective fields of interest. Almost all the libraries are reluctant in acquiring rare materials, microfilms and manuscripts.

Table 3.1: Distribution of Collection in sample libraries by categories

Type of Collection	NHLDC	ICDDR,B	BSMMU	DMC	DGFP	BIRDEM	NIPORT	MOHFW	NIPSOM	DPS, DU	INFS, DU	NIPHN
Books	16302	8920	23277	30858	127	6324	2486	1186	2756	3455	7000	548
Reports	600	3145	766	50	2900	0	4312	1780	966	87	234	25
Reference Books	14284	323	1766	523	0	500	100	124	411	246	218	56
Rare collection	150	38	0	0	0	0	0	0	50	0	0	0
Manuscripts	0	0	0	0	0	0	0	0	0	0	0	0
Research Papers	571	652	1810	242	50	137	0	268	2378	50	169	15
Journals (inland)	32	91	73	27	5	40	20	4	11	6	6	2
Journals (foreign)	44	47	134	11	6	62	10	3	6	8	9	0
Newspaper	4	0	12	6	13	8	5	19	1	4	5	3
News clippings	4	0	500	0	0	0	20	0	0	0	0	0
Audio/Video	0	140	126	0	0	0	20	0	0	0	0	0
Micro forms	0	0	0	0	0	0	0	0	0	0	0	0
In-house Publications	5	652	10	15	5	0	120	0	1	0	0	0
Bound journals	0	285	4573	75	125	391	0	452	318	278	1500	0
Total	31996	14293	33047	31807	3231	7462	7093	3836	6898	4134	9141	649

Almost 50% libraries and information centers have no orientation with digital/electronic information sources. It indicates that these library do not have any CD-ROM literature, in-house bibliographic or text database, no online or Internet facilities. Table 3.2 shows that among the 50% libraries 16.6% i.e. 8.3% of the sample libraries have digital collections in real sense of

the term. Rest of the libraries maintain bibliographic database and a very few CD-ROMs with bibliographical information or full text. Among the sample libraries only the Library and Information Service Unit (LISU) of ICDDR,B maintains full text database and provides download facilities. The full text database covers ICDDR,B journals, working papers and reports. Beside this the LISU maintains bibliographical database like NHLDC, BSMMU, BIRDEM and NIPORT library. Some of the libraries like ICDDR,B, BSMMU, BIRDEM, and Department of Population Science of Dhaka University have began to subscribe e-journals at a very limited scale.



Source: Survey data

3.3.1 Methods and process of acquisition

Library acquisition is the complete process of collecting information resources based on the information needs of the users. There are four common methodologies for collection development: i) Purchase/subscription, ii) Gift/donation, iii) Exchange, and iv) internal/in-house publication.

Table 3.2: Distribution of digital collection status among the sample libraries

Type of Collection	NHLDC	ICDDR,B	BSMMU	BIRDEM	NIPORT	DPS, DU
Full text record	0	687	0	0	0	0
Bibliographical records	4000	9735	1907	2113	5600	0
E-books	0	140	0	0	0	10
E-journals	32	8	1	2	0	0
CD-ROM	150	150	0	25	1	5
Total	4182	10720	1908	2140	5601	15

Depending on the needs and abilities librarians may adopt more than one methodology. During investigation of the study the librarians were asked in questionnaire about the methodologies they adopt. The result has been reflected in table 3.3. The table shows that all the libraries in the health population and nutrition sector follow two common methodologies for collection development: Purchase and Donation/gift. To show the mode of purchase the librarians reported that 66.7% libraries purchase books and periodicals from vendors and no library purchase books from publisher directly. 16.7% libraries purchase directly from the market through the librarians and 16.7% by the administration directly without any concern of the librarians or the library committee (annex table 2). Only 25% libraries have exchange programs and 58.3% have internal publications in the form of reports, journals, etc.

Table 3.3: Sources of acquisition by type of sample libraries

Acquisition Process	Health		Population		Nutrition		HPN		All Libraries	
	N	%	N	%	N	%	N	%	N	%
Purchase	4	100.0	3	100.0	2	100.0	3	100.0	12	100.0
Donation	4	100.0	3	100.0	2	100.0	3	100.0	12	100.0
Exchange	1	25.0	1	33.3	-	-	1	33.3	3	25.0
Internal publications	3	75.0	2	66.7	-	-	2	66.7	7	58.3
Total	12	100.0	3	100.0	2	100.0	3	100.0	12	100.0

The general scenario of purchasing process is that at the beginning of the fiscal year the librarian/ library committee/book selection board prepares short

list from the list of publisher or vendor's catalog. After selection they place order with the vendor for supply. Book selection is one of the important aspects of library acquisition process. The book selection process of an organization is normally guided by some policy guidelines. In the study the librarians were asked about selection policy related questions. Their answers have been represented in the table 3.4. According to this table no sample library conduct user survey to know their information needs and 50.0% libraries consider written, telephone or verbal request of the user for collecting requested publication(s). Among the libraries who pay attention to the electronic or written requests of the users 25.0% are health sector libraries, 8.3% in population and 16.7% are serving in the health, population and nutrition (HNP) field.

Table 3.4: Book selection policy for acquisition by type of sample libraries

Policy issues	Health		Population		Nutrition		HPN		All Libraries	
	N	%	N	%	N	%	N	%	N	%
User survey by the library/institution	-	-	-	-	-	-	-	-	-	-
Users' request through telephone or written request slip	3	25.0	1	8.3	-	-	2	16.7	6	50.0
Online request by the user	1	8.3	1	8.3			1	8.3	3	25.0
Through meeting of the selection board/library committee	3	25.0	2	16.7	2	16.7	3	25.0	10	83.3
By the librarian as list supplied by the book vendors or from the publishers catalog	3	25.0	1	8.3	1	8.3	1	8.3	6	50.0
As per the request of the administration of the parent body/ donor	3	25.0	2	16.7	1	8.3	2	16.7	8	66.7
Total	4	33.3	3	25.0	2	16.7	3	25.0	12	100.0

It is significant to note that though only 8.3% libraries include digital collections including e-books and e-journals, all librarians have shown their positive attitude toward digital collections. Table 3.5 shows that around 66.6% librarians believe that digital collection is easier to handle and use. 58.3% librarian opined that digital documents are less expensive than printed media. As a result they can collect more resources with their budget. A similar proportion of librarians holds opinion that if they can include digital collection, they will be able to provide direct document delivery service in addition to bibliographical information. 50% librarians think that there are many e-books

and e-journals on the Internet which are available free of cost; 91.6 percent Librarians argued that digital documents provide more facilities in carrying and transmission. About 75% of information workers believe that with the inclusion of digital collection they can save considerable amount of space cost and 33.3% think that they will be able to introduce Electronic Document Delivery (EDD) system which will lead toward doorstep information service and virtual library system in future.

Table 3.5: Distribution of attitude and positive arguments of librarians toward digital collection by type sample libraries

Argument for inclusion of Digital collection in the library	Health		Population		Nutrition		HPN		All Libraries	
	N	%	N	%	N	%	N	%	N	% l
Positive attitude	4	100.0	3	100.0	2	100.0	3	100.0	12	100.0
Reasons										
More easy to use	2	25.0	3	37.5	1	12.5	2	25.0	8	66.6
Less expensive	3	42.9	2	28.6	1	14.3	1	14.3	7	58.3
Free download	2	33.3	2	33.3	1	16.7	1	16.7	6	50.0
More convenient in caring and transmission to users	3	27.3	3	27.3	2	18.2	3	27.3	11	91.6
Customized document delivery besides bibliographic information	2	28.6	2	28.6	1	14.3	2	28.6	7	58.3
Compact storage is possible	3	33.3	2	22.2	2	22.2	2	22.2	9	75.0
EDD services can be introduced	2	50.0	1	25.0	-	-	1	25.0	4	33.3

3.3.2 Accessioning information resources

Accessioning is one of the important and normally the ending process of library acquisition. Accession is the formal acceptance into physical and legal custody of an addition to the holdings of the library and information center. It is the process of creating a record with the metadata/bibliographical information including its sources. In traditional librarianship the librarians maintain a register for writing bibliographical information as well as some information on acquisition sources and assign an auto incremental number for each item. The survey data in table 3.6 show that about 58.3% libraries maintain manual registers for accession. About 25% libraries maintain both computerized database as well as manual register in which 25% are in health and 75% in Health, Population and Nutrition (HPN) sector libraries. Only 8.3%

sample libraries use only bibliographical database while 8.3% libraries maintain neither accession register nor database.

Table 3.6: Distribution of accession methods by type of sample libraries

Accession methods	Health		Population		Nutrition		HPN		All Libraries	
	N	%	N	%	N	%	N	%	N	%
Manual register	3	42.9	1	14.3	2	28.6	1	14.3	7	58.3
Both manual and computerized Accessioning	1	25.0	- -	-	-	-	2	75.0	3	25.0
Computerized accessioning	-	-	-	-	-	-	-	-	-	-
Not maintaining but bibliographic database	-	-	1	100.0	-	- -	-	-	1	8.3
No Accessioning practice	-	-	1	100.0	-	-	-	-	1	8.3

3.4 Information organization and processing

Information organization is concerned with securing and processing materials for patron use. This work consists of all the tools and techniques for describing the information sources and the provision of accessing to the sources (Bloomberg and Evans 1993: 1). In addition to creating and maintaining catalog for library holdings, information organization also includes some other activities such as shelf maintenance, stocktaking and verification, weeding, indexing and abstracting services, serial control, etc. All these issues have been addressed in the study.

3.4.1 Classification and cataloging

It has been reported in the earlier section that the collections of 8.3% sample libraries in the said health, population and nutrition sector are unorganized or remains in unsystematic order. Among the libraries that have been brought under a systematic order, 33.3% i.e. one third of the libraries use only traditional card catalog. Of them 16.7% are in health sector and 8.3% in nutrition and HPN sector. Around 50% libraries maintain bibliographical databases and of them 25% libraries maintain both card catalog and database. Table 3.7 shows that the relative distribution is almost equal in health, population and nutrition sectors. Most of the libraries prepare bibliographic entries following AACR-2. About 50% libraries use National Library of Medicine (NLM) Classification Scheme and rest 50% use Dewey

Decimal Classification (DDC) scheme. Universal Decimal Classification (UDC), Library of Congress (LC) Classification or any thesaurus or subject list have no impact in the health and population sector libraries.

3.4.2 Bibliographic database

A wide range of dissimilarities have been noticed among those who are maintaining databases. A large number of libraries use CDS/ISIS or WINISIS of UNESCO- library management software available free of cost. Some of them are trying to develop web based database system using MYSQL and PHP. However, no uniformity has been found either in attribute selection or in naming convention during database design. As a result it would be difficult for the libraries to participate in a greater network and contribute their bibliographical entries to develop a centralized database.

Table 3.7: Distribution of methods for technical processing of library resources by type of sample libraries

Processing methods and classification	Health		Population		Nutrition		HPN		All Libraries	
	N	%	N	%	N	%	N	%	N	%
Methods of organization(Cataloging/bibliographic database)										
Manual cataloging/ card catalog	2	16.7			1	8.3	1	8.3	4	33.3
Computerized bibliographic database	1	8.3	1	8.3			1	8.3	3	25.0
Both card catalog and database	1	8.3	1	8.3			1	8.3	3	25.0
Accession register only					1	8.3			1	8.3
Neither catalog nor accession register/database			1	8.3					1	8.3
Total	4	33.3	3	25.0	2	16.7	3	25.0	12	100.0
Classification Schemes										
DDC 19th Ed	1	10.0	-	-	1	10.0	1	10.0	3	30.0
DDC 20+ Ed	-	-	2	20.0	-	-	-	-	2	20.0
UDC	-	-	-	-	-	-	-	-	-	-
LC	-	-	-	-	-	-	-	-	-	-
List of subject heading	-	-	-	-	-	-	-	-	-	-
Thesaurus	-	-	-	-	-	-	-	-	-	-
NML	3	30.0	-	-			2	20.0	5	50.0
Total	4	40.0	2	20.0	1	10.0	3	30.0	10	100.0

3.4.3 Indexing and abstracting services

The word index originated from the Latin word 'indicare' which means to indicate or point out. An index is a systematically arranged list of names, terms, topics, places, or other significant terms in a completed work with exact page references to items discussed in that work (Rowley, Jennifer 1993: 2). In

the age of information explosion indexing services play an important role in tracing out the desired documents and their internal contents. There are different types of indexing systems e.g. books indexing- helps in pointing particular items of information across the book; periodical indexing- guide the user in finding desired information especially recent articles published in the journal; newspaper indexing- a separate documentation on the news, articles or other items in the newspapers that guide users in retrospective searching.

Table 3.8: Provision of indexing and abstracting services by the type of sample libraries

indexing and abstracting services	Health		Population		Nutrition		HPN		All Libraries	
	N	%	N	%	N	%	N	%	N	%
indexing services										
Provision of Indexing service	1	8.3	1	8.3	-	-	2	16.7	4	33.3
Periodical indexing	-	-	2	50.0	-	-	2	50.0	4	100.0
Newspaper article indexing	1	25.0	-	-	-	-	-	-	1	25.0
Preparation of list of new arrivals	1	25.0	1	25.0	-	-	2	50.0	4	100.0
Preparation of reading list	1	25.0	-	-	-	-	1	25.0	2	50.0
Online site listing	1	25.0	-	-	-	-	-	-	1	25.0
Online bibliography searching and listing	1	25.0	1	25.0	-	-	1	25.0	3	75.0
Subscribing indexing journals	-	-	-	-	-	-	-	-	-	-
Total	1	25.0	1	25.0	-	-	2	50.0	4	100.0
Abstracting services										
Provision for abstracting services	1	8.3	1	8.3	-	-	-	-	2	16.7
Preparing abstract/ annotation	-	-	-	-	-	-	-	-	-	-
Preparing documentation list	1	50.0	1	50.0	-	-	-	-	2	100.0
Purchasing abstracting journals	-	-	-	-	-	-	-	-	-	-
Total	1	50.0	1	50.0	-	-	-	-	2	100.0

The indexing services in the health and population sector libraries in Bangladesh are not inspiring. Table 3.8 shows the provision of indexing and abstracting services in the country. According to the survey data only 33.3% libraries in the sector provide indexing services and of them, 8.3% in the health and another 8.3% in the population sector and the rest 16.7 in the HPN sector. A wide variety of indexing services have been found to be available in the libraries. All these libraries provide periodical indexing and indexing of new arrivals. About 75% libraries have online searching facilities and 50% libraries prepare reading list on demand while 25% have online site listing and

news indexing system. It is important to note that no library subscribe indexing journal which is an important source in searching world literature.

Table 3.9: **Distribution of the problems caused due to absence of indexing and abstracting services by type of sample libraries**

Problems	Health		Population		Nutrition		HPN		All Libraries	
	N	%	N	%	N	%	N	%	N	%
Difficulty in tracing desired publications from the library	2	22.2	2	22.2	-	-	3	33.3	7	77.8
Unable to help the user in choosing publications pertinent to his/her interest	1	11.1	2	22.2	1	11.1	-	-	4	44.4
Users' attraction to the library is gradually decreasing	1	11.1	-	-	1	11.1	2	22.2	4	44.4
User has to spend relatively more time in literature searching	2	22.2	1	11.1	1	11.1	1	11.1	5	55.6
More time needs to be spent for a single user	1	11.1	2	22.2	1	11.1	2	22.2	6	66.7
Total	2	22.2	2	22.2	2	22.2	3	33.3	9	100.0

As a guide to the selection of literature, abstract and abstracting services are treated as significant tools in the libraries. An abstract is an abbreviated, accurate representation of the original document or an indication of the basic characteristics of the original. There are two basic types of abstracts: indicative abstract which contains a general statement of the nature and scope of a document- and informative abstract- provides enough information to decide whether it is necessary to read the original document. It contains the procedures, results, and conclusions of significant findings reported in the document. The study result presented in table 3.9 indicates that there is no abstracting service in the health and population sector libraries in Bangladesh in true sense of the term. No librarian produces any abstract/summary/annotation to the documents in library or subscribes any abstracting journals. However, about 16.7% libraries sometimes prepare documentation list from the books, reviews, reports or journal articles abstracts.

The librarians have reported that due to inadequacy or absence of indexing and abstracting services they have been facing a lot of problems in the library services. Table 3.10 presents the distribution of the problems among the sample libraries. Nine of the 12 sample libraries are suffering from different types of problems. Among these 77.8% libraries have reported that they used to feel problems in tracing desired documents especially in the searching of periodical articles due to inadequacy of indexing tools. 66.7% libraries have felt that they are to spend more time to meet the information requirement of a single user. About 44.4% libraries thought that they could not help the user properly in selecting relevant document of their interest and attraction to the library was gradually decreasing. About 56.6% librarians observed that due to inadequacy of indexing and abstracting mechanisms, they have to spend more valuable time for a single user in literature searching.

Table 3.10: Distribution of causes of the absence of indexing and abstracting services by type of sample libraries

Problems	Health		Population		Nutrition		HPN		All Libraries	
	N	%	N	%	N	%	N	%	N	%
Indexing services										
Lack of expert manpower	1	12.5	2	25.0	2	25.0	1	12.5	6	75.0
Insufficient fund	2	25.0	1	12.5	2	25.0	1	12.5	6	75.0
Extra work load.			2	25.0	2	25.0	1	12.5	5	62.5
User never ask for the services	2	25.0							2	25.0
Total	3	37.5	2	25.0	2	25.0	1	12.5	8	100.0
Abstracting services										
Lack of expert manpower	2	20.0	2	20.0	2	20.0	2	20.0	8	80.0
Insufficient fund	1	10.0	2	20.0	2	20.0	2	20.0	7	70.0
Extra work load.	1	10.0	1	10.0	2	20.0	1	10.0	5	50.0
User never ask for the services	1	10.0			1	10.0	1	10.0	3	30.0
Total	3	30.0	2	20.0	2	20.0	3	30.0	10	100.0

About 75 to 80% librarian opined that they cannot take proper initiatives for indexing and abstracting services due to lack of expert manpower and insufficient fund. Around 50 to 62.5% library professionals in the sector considered the work as extra load while 25 to 30% reported that indexing and abstracting services are needless because user never ask for such sort of services. But professionals in the field think that it is a lame excuse and they think that librarians should give emphasis on proper orientation of user on the

importance of indexing and abstracting tools in information searching and retrieval.

3.5 Library and information services

Library and information services may take the form of providing the users with desired information or of giving them opportunity to gain access to it. Dissemination can involve: (a) the primary document itself (or a copy); (b) the reference of the document in 'secondary products' of various types; (c) the information contained in the document, presented in various 'tertiary' products; and (d) the sources of information (Guinchat and Menou (1989: 219).

Table 3.11: Distribution of services provided by the sample libraries

Services	NHLDC	ICDDR,B	BSMMU	DMC	DGFP	BIRDEM	NIPORT	MOHFW	NIPSOM	DPS, DU	INFS, DU	NIPHN
Reading room services	√	√	√	√	√	√	√	√	√	√	√	√
Reference and/or information services	√	√	√	-	-	√	√	√	√	√	√	-
Circulation/Loan system	-	√	√	√	-	√	√	√	-	-	√	√
Inter-library loan system	√	√	-	-	-	-	√	-	-	-	-	-
Bibliographical services	√	√	√	-	-	√	√	-	-	-	√	-
Indexing and Abstracting services	√	√	√	-	-	-	√	-	-	-	-	-
Current Awareness Services (CAS)	√	√	√	-	-	√	√	√	√	-	-	-
Selective Dissemination of Information (SDI)	-	√	√	-	-	√	-	-	-	-	-	-
News clipping	√	-	√	-	-	-	√	-	-	-	-	-
In-house database/CD-ROM searching	√	√	√	-	-	√	√	-	-	-	-	-
Electronic Document Delivery (EDD)	-	√	√	-	-	-	-	-	-	-	-	-
Internet and online browsing facilities	√	√	√	-	-	√	-	-	√	√	-	-

In the study questionnaire the libraries were asked about the services provided. The services provided by the sample libraries can be seen at a glance in table 3.11.

3.5.1 Reading room facilities

Most of the sample libraries have varying types of reading room facilities according to their capabilities in terms of space, furniture, environment, etc. Annex table 4 'Seating arrangement by the type of the sample libraries' shows that the average number of seating arrangement in the reading room is for 99 persons. The smallest reading room is in the National Institute of Public Health and Nutrition (NIPHN) library having arrangement for only 15 readers and the largest one is in the BSMMU central library having capacity for 750 persons. An assorted type of figures has been noticed in the sector wise distribution of the seating capacity e.g. in the health sector average seating capacity is 230 with minimum of 45 and maximum of 750 persons while, in the population, nutrition and HPN sectors the figures are: 18:15:20; 25:15:35 and 55:25:100 respectively.

Table 3.12: Distribution of services provided by type of sample libraries

Services	Health		Population		Nutrition		HPN		All Libraries	
	N	%	N	%	N	%	N	%	N	%
Reading room services	4	33.3	3	25.0	2	16.7	3	25.0	12	100.0
Reference and/or information services	3	25.0	2	16.7	1	8.3	3	25.0	9	75.0
Circulation/Loan system	3	25.0	1	8.3	2	16.7	2	16.7	8	66.7
Inter-library loan system			1	8.3			2	16.7	3	25.0
Bibliographical services	2	16.7	1	8.3	1	8.3	2	16.7	6	50.0
Indexing and Abstracting services	1	8.3	1	8.3	-	-	2	16.7	4	33.3
Current Awareness Services (CAS)	3	25.0	2	16.7	-	-	3	25.0	8	66.6
Selective Dissemination of Information (SDI)	2	16.7			-	-	1	8.3	3	25.0
News clipping	1	8.3	1	8.3	-	-	1	8.3	3	25.0
In-house database/CD-ROM searching	3	25.5	1	8.3	-	-	2	16.7	6	50.0
Electronic Document Delivery (EDD)	1	8.3			-	-	1	8.3	2	16.7
Internet and online browsing facilities	3	25.0	1	8.3	-	-	2	16.7	6	50.0

3.5.2 Reference and information services

Reference/information section is one of the important parts of library services. From the early concept of librarianship, it has been given due attention during designing any library or information support system because: it is the service responsible for provision of specific information, assistance in searching and

locating documents and information, personal assistance in using library resources (Kumar 1998: 11). Though most of the library authorities and professionals have recognized the significance of reference services, it has not yet been possible for them to establish separate reference sections in their library. The study data (table 3.12) show that around 75% sample libraries have been able to establish separate reference section in their libraries of which 25% in health, 16.7% in population, 8.3% in nutrition and 25% in the HPN sector libraries. The average accommodation size in the reference section is 28 persons with 20 in health, 15 in population and 28 in HPN sector libraries.

To explore the user access pattern in the reading room and reference section, it has been identified that 66.7% libraries, in which 8.3% libraries in health, 25.0% in population, 8.3% in nutrition and rest 25% in HPN sector libraries have adopted open-shelf policy. In open shelf policy users can access to the stack area and can pick desired materials from the shelf independently. On the other hand, close shelf policy is the opposite to the open shelf and library staff brings the publications from the shelf in response to the users' requisition slip. About 33.3% libraries follow close shelf policy (Table 3.13). It is interesting to note that most libraries who follow open shelf policy are special libraries and the rest are academic libraries.

Table 3.13: Access pattern to information sources.

Access pattern	Health		Population		Nutrition		HPN		All libraries	
	N	%	N	%	N	%	N	%	N	%
Open	1	8.3	3	25.0	1	8.3	3	25.0	8	66.7
Close	3	25.0	-	-	1	8.3	-	-	4	33.3
Total	4	33.3	3	25.0	2	16.7	3	25.0	12	100.0

3.5.3 Borrowing facilities

In the circulation system or borrowing/loan services the user can borrow certain number of books outside the library for a certain period of time. In that case eligible user, the number of materials and loan period are determined by the library administration. Table 3.12 shows that around 66.7% sample

libraries have circulation system in which 25% in health, 8.3 in population, 16.7% in HPN sector libraries. According to the circulation desk service statistics (reflected in the table 3.14), it is evident that the sample libraries used to issue around 91 publications and receive back 87 publications every week. Reservation is one of the important aspects of circulation system but not a single library has such provision.

3.5.4 Inter-library loan

In inter-library lending system libraries can exchange or borrow publication from other libraries having a common agreement among themselves for resource sharing. In this regard the survey data show an interesting trend. In the questionnaire (Section 4, Question 4.1d) the librarians have reported that their library have the provision for inter-library loan system. But in another question (Section 4, Question no. 4.3d: ask for service statistics of the date interviewed) they were unable to provide relevant service statistics. It should be mentioned here that this 25% libraries are member of some network. More specifically speaking, 3 sample libraries have been attested to specific network. These are: NIPORT library is a member of POPIN (Population Information Network) and other two libraries NHLDC and LISU of ICDDR,B are the members of HELLIS network of WHO. The absence of service statistics indicates that formally/officially these libraries have to offer inter-library loan facilities but the services could not be materialized yet or the services had been stopped recently, or the network was a theoretical, invisible, and inactive network.

Table 3.14: Distribution of the users visited and library service statistics weekly by type of sample libraries

User category	Health		Population		Nutrition		HPN		All Libraries	
	N	%	N	%	N	%	N	%	N	%
Service statistics available	3	25.0	2	16.7	-	-	2	16.7	7	58.3
Weekly statistics of visit of different category of users										
	Sum	Mean	Sum	Mean	Sum	Mean	Sum	Mean	Sum	Mean
Employee of the parent body	192	64	135	68	-	-	120	60	447	64
Researcher	302	101	110	55	-	-	40	20	452	65
Government official	162	54	30	30	-	-	10	10	202	40
Specialized user	52	26	25	25	-	-	35	18	112	22

User category	Health		Population		Nutrition		HPN		All Libraries	
	N	%	N	%	N	%	N	%	N	%
from outside organization										
Student and faculty	8934	2978	111	56	-	-	120	60	9165	1309
General public	52	26	14	14	-	-	20	20	86	22
Weekly library transaction in the library										
Loan stat_ Issue	495	124	35	35	95	48	105	105	730	91
Loan stat_ Received	480	120	20	20	93	47	105	105	698	87
Loan stat_ reservation	.	.	.	.	-.	-.	.	.	.	.
Loan stat_ inter circulated	.	.	.	.	-.	-.	.	.	.	.
Service Statistics provided by the library every week										
Number of users receiving reading room services	8126	4063	170	85	-	-	204	102	8500	1417
Number of reference questions answered	130	65	20	10	-	-	560	280	710	118
Number of referral cases	75	38	15	8	-	-	25	25	115	23
SDI service provided	4	2	6	6	-	-	35	35	45	11
Number of users served with indexing tools	20	10	5	5	-	-	18	18	43	11
Number of users using library catalog	.	.	15	15	-	-	140	70	155	52
Number of users that consult abstracts/asked for abstract	21	11	20	20	-	-	10	10	51	13
Number of users searching in-house bibliographic database	15	8	30	30	-	-	115	58	160	32
Number of users searching CD_ROM database/full text	0	0	15	15	-	-	5	5	20	5
Number of users received electronic document	3	2	1	1	-	-	30	30	34	9
Number of user browsed Internet resources	183	92	.	.	-	-	164	82	347	87

3.5.5 Bibliographic, indexing and abstracting services

Bibliographical service means the provision of listing information sources. It includes preparation of bibliography on author, subject or nation; short reading

list etc. According to table 3.12, around 50% libraries provide bibliographical services in which 16.7% are in health and HPN and 8.3% both in population and nutrition sector libraries. A detailed discussion on indexing and abstracting has been provided in the earlier section (3.4 information organization). Table 3.12 also shows that only 33.3% samples libraries have indexing or abstracting or both the services with limited range.

3.5.6 CAS and SDI

Basically Current Awareness Services (CAS) is concerned with dissemination of information that will keep the users well-informed and up-to-date in their fields of basic interest as well as in the related subjects. By current information we mean the knowledge of new theoretical ideas and hypotheses, new problems to be solved, new methods and techniques for solving old and new problems, new circumstances affecting what people do and how they may do it. In the enormous growth of scientific and technical literature, CAS enables the researcher to keep him/herself up-to-date and well informed in his/her field of specialization.

Table 3.12 shows that about 66.6% sample libraries provides current awareness services in different methodologies in which 25.0% are in health and HPN, and the rest 16.7% in population sector libraries. There are different ways and means to provide CAS and Selective Dissemination of Information (SDI) services. Librarians were asked in the questionnaire on the methodologies: The responses have been summarized in the table 3.15 indicating that 87.5% sample libraries display new arrivals and 62.5% libraries send list of content page of new arrival. Around 25% libraries send accession list, periodic message and library bulletin and 37.5% libraries send message to users through telephone. Only 12.5% libraries use Electronic Record Delivery (EDD) and Internet in searching current information.

Table 3.15: Distribution of methods of providing CAS by type of sample libraries

Services	Health		Population		Nutrition		HPN		All Libraries	
	N	%	N	%	N	%	N	%	N	%
Display new arrivals	4	50.0	1	12.5	1	12.5	1	12.5	7	87.5
Sending list/content page of new arrivals	3	37.5	1	12.5	-	-	1	12.5	5	62.5
Sending accession list	2	25.0	-	-	-	-			2	25.0
Library bulletin	-	-	-	-	-	-	2	25.0	2	25.0
Periodic message sent on recent arrival	1	12.5	1	12.5	-	-			2	25.0
Telephone message	1	12.5	1	12.5	-	-	1	12.5	3	37.5
Electronic document delivery (EDD)	1	12.5	-		-	-			1	12.5
Library Web site	-	-	-		-	-	1	12.5	1	12.5
Total	4	50.0	1	12.5	1	12.5	2	25.0	8	100.0

3.5.7 In-house database and CD-ROM searching

The number of electronic document users is increasing in the recent times at the individual level. However, the electronic document acquisition, preservation, searching and retrieval trends are still at the primary stage both for librarians and users. Table 3.12 and table 3.14 indicated this trend. It has been mentioned earlier that 50% sample libraries maintain bibliographical databases. Table 3.14 shows that on an average 32 library visitors search the bibliographic database in a sample library every week that is less than 7 people daily. Though some of the libraries include bibliographies on CD-ROM e.g. MEDLINE, POPLINE, the users are rarely informed about the sources and seldom use them.

3.5.8 Electronic text and Internet

No library includes e-books and e-journals in their collection but a single library (LISU of ICDDR,B) maintains electronic collection on the web server. This collection includes internal publications e.g. ICDDR,B journals, working papers, research reports annual reports, etc. Tables 3.12 and 3.14 indicate that though 50% users in the library are habituated to access Internet resources only 16.7% of them use electronic text or downloaded resources. On an average 87 library users used to access the Internet every week of them 9 person used to receive electronic document. In the context it is to say

that only 8.3% collection of the sample libraries are on the web. To realize the usefulness of electronic resources the libraries need to give more emphasis on electronic resource acquisition and provide adequate orientation on the usage of these resources to users.

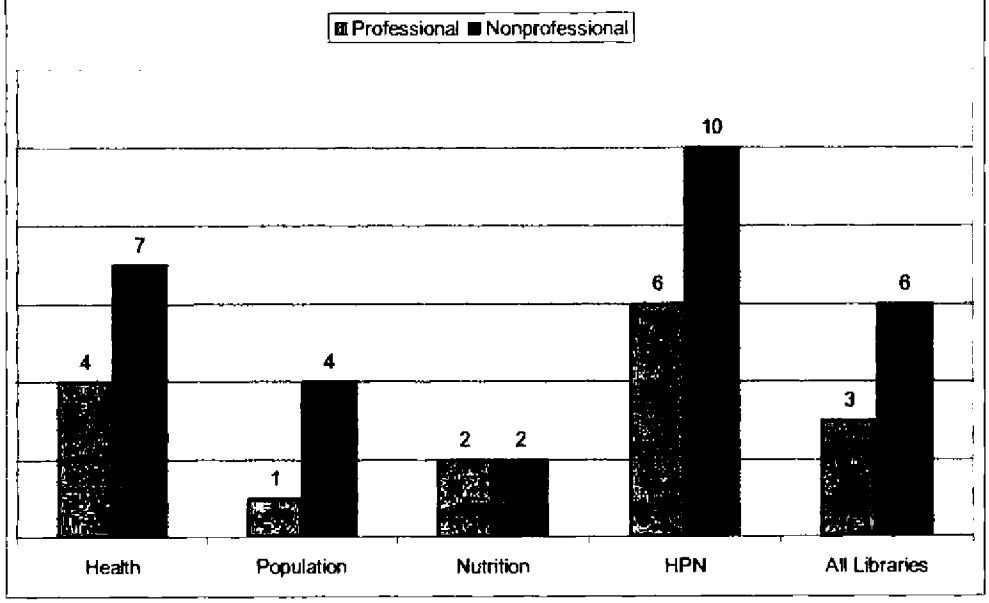
3.6 Human resources

3.6.1 Staffing pattern

The human resources in modern librarianship is consisted of diversified skilled manpower e.g. Library professional, ICT expert, System engineer, reprographer, as well as non-professional staff. In librarianship library workers are divided into professional and non-professional staff. By professional we mean the library worker who has a basic training on librarianship preferably a basic degree on library and information science. The following figure indicates that the average ratio of professional and non-professional work force is 1:2. Of course variations have been noticed in the sector wise distribution. It is important to note that 33.3% sample libraries are administrated by non-professional staff. During survey, it has been noticed that the chief librarian in the National Health Library and Documentation Center (NHLDC), Dhaka Medical College Library, Directorate of Family Planning Library and NIPSOM library are non-professional. Several library employees of these libraries have opined that direction and co-ordination from non-professionals often led them to confusion and brings torpid in professional works.

According to the annex table 6, about 58% libraries are suffering from lack of skilled manpower. The capability of these libraries should be substantiated by skilled manpower; otherwise all the functions of a library will be weakened. Around 42% sample libraries have reported that they have sufficient number of staff.

Figure 3.3: Sector-wise distribution ratio of professional and non-professional staff



Sources: Survey data

3.6.2 Professional development

One of the disappointing findings of the study is that (according to annex table 7) only 33.3% librarians in the study sector have the opportunity for professional development. By this opportunity we mean the provision or right financial and administrative support to participate in higher study, special training or workshop etc. Around 67% librarians of all categories and no library workers in the population and nutrition sector have such sort of opportunities. This table also indicates that during the last five years ten library workers could participate in professional training programs out of which 3 were in health and 7 in the HPN sector libraries.

One of the positive aspects as indicated in the table 3.16 is that 42.54% staff of all categories has the tendency to switch themselves from traditional librarianship to ICT based information work. The percentage is very significant in HPS sector (66.18%), less impressive in health and population sectors (30.18% and 20.0% respectively) and disappointing in nutrition sector (0%).

Most of the library workers who have knowledge on ICT field (42.54% of the total staff) have informed that their knowledge sources were 'specialized training" and 'self education'. Another important source was 'Consultation / instruction from colleagues and friends' (60%) while 40% workers informed that they learnt ICT by participating in specialized workshop and 20% from additional degree from educational institution.

Table 3.16: Discipline switching trends of staff to ICT based librarianship and their knowledge sources by type of sample libraries

Number of ICT staff and their knowledge sources	Health		Population		Nutrition		HPN		All Libraries	
	sum	%**	sum	%	sum	%	sum	%	sum	%
N	10	30.18	1	20.00	-	-	19	66.18	30	42.54
Knowledge sources										
Additional institutional degree/short course	-	-	-	-	-	-	1	20.0	1	20.0
Specialized training (home/abroad)	2	40.0	1	20.0	-	-	2	40.0	5	100.0
Self education	2	40.0	1	20.0	-	-	2	40.0	5	100.0
Special training/instruction from friends/colleague	1	20.0	1	20.0	-	-	1	20.0	3	60.0
Specialized workshop/seminar	1	20.0	-	-	-	-	1	20.0	2	40.0

** % indicates that % of total staff of the library.

3.6.3 Staff evaluation

Staff evaluation is an important aspect of performance analysis of an organization. Study data (Annex table 8) show that around 60% libraries have no provision for staff evaluation and equal percentage (16.7%) has been shared among the libraries in health, population and nutrition sector libraries and 8.3% in HPN sector. About 41.7% libraries follow staff evaluation procedures. According to the respondents most of the libraries follow dual methods in staff evaluation: (i) Analysis of service records and (ii) Observation. Only one library in the health sector (20%) has reported that it used to maintain staff evaluation forms to be filled-in by the library users and 3 libraries in health and HPN sector (60%) have reported that they put forward assignment to employees. Another library has informed that they used to arrange internal examination for staff evaluation.

3.7 Library administration and finance

Library Administration provides leadership and support for libraries in its mission to enrich the learning experience, encourage exploration and research at all levels, and contribute to advancements in access to scholarly resources. During investigation of library systems in the health population and nutrition sector in Bangladesh, library committee, empowerment of librarian, financial issues especially fund raising activities have been addressed.

3.7.1 Library authority

There is no unique authority for the existing library systems or any central co-ordination or cooperation agency in Bangladesh. From the capital city to the rural areas different types of libraries are serving different users with varied collections that are financed and administrated by different authorities. Most of the special libraries in the country are administrated by their parent institution. The study data show that around 58.3% libraries in the sample areas are governed by the administration of the parent body. About 25% libraries are running under the direction and coordination of the library committee and 16.7% by the governing body (table 3.17). It needs to be mentioned that by nature the second two groups are academic libraries. Library committees can play an important part in decision making as well. The library committee or governing body is usually a small, multidisciplinary group that acts as a liaison between the library, its users and the administration. Its purpose is to assist the librarian in planning and implementing library policies. During designing the questionnaire there was hypothesis that there may be some libraries having governance by the donor agency of finance committee of the organization. But in the field survey such type of libraries could not be traced out.

Ideally a librarian is and should be the administrative and executive head of a library. But in practice 3 out of 12 sample (25%) librarians can take part in the administrative work.

Table 3.17: Distribution of the administrative body and administrative works in the libraries

Administrative body and type of administrative work	Health		Population		Nutrition		HPN		All Libraries	
	N	%	N	%	N	%	N	%	N	%
Library Committee	1	8.3			1	8.3	1	8.3	3	25.0
Administration of the parent organization	3	25.0	2	16.7	1	8.3	1	8.3	7	58.3
Governing body			1	8.3			1	8.3	2	16.7
Donor agency	-	-	-	-	-	-	-	-	-	-
Finance committee	-	-	-	-	-	-	-	-	-	-
Total	4	33.3	3	25.0	2	16.7	3	25.0	12	100.0
Participation of librarian in administrative work										
Yes	3	25.0	2	16.7	1	8.3	3	25.0	9	75.0
No	1	8.3	1	8.3	1	8.3			3	25.0
Different aspects of Library Administration										
Book selection	3	25.0	2	16.7	1	8.3	3	25.0	9	75.0
Library purchase and other acquisition work	2	16.7	2	16.7	1	8.3	2	16.7	7	58.3
Staff selection and recruitment	1	8.3	-	-	-	-	2	16.7	3	25.0
Staff training and evaluation	2	16.7	-	-	-	-	2	16.7	4	33.3
Essential maintenance	2	16.7	-	-	-	-	2	16.7	4	33.3

Table 3.17 indicates that 75% librarians are exercising minimum administrative power in book selection work. This participation decreases to 58.3% in case of purchase or other acquisition work. Only 25% librarians can sit at the staff selection and recruitment board; librarians in the population and nutrition sector do not participate in such sort of administrative work. About 33.3% librarians have participation in staff training, performance evaluation of other library staff, essential maintenance works, etc. Like recruiting work the librarians in the population and nutrition sector can participate neither in staff training nor in essential maintenance work. In response to the question about the adequacy of budget, about 92% libraries informed that they are suffering form inadequate fund support (details in Annex Table 9). Only one sample library (8.3%) LISU of ICDDR,B reported that they have adequate fund support.

3.7.2 Fund raising activities

A library is generally treated as nonprofit organization, however, many institutions are to work for financial and organizational sustainability. Charge for library services is not a new concept, even in the health and population sector libraries in Bangladesh. Fifty percent of the libraries have fund raising

activities which includes membership subscription fees, Internet browsing fees, photocopy charges, etc. (table 3.18). The data show that up to the first decade of the twenty first century the concept of fee based library services and on payment for electronic document delivery services have not been introduced in the libraries. Two-third of the libraries that have fund raising activities maintain fee based membership. These libraries are academic libraries and in most of the libraries the fees are deposited to the fund of central administration and the library receives annual budget from the parent body. This indicates that no money goes to the library fund directly. Most of the libraries impose charges for photocopy of documents and 50% libraries receive Internet browsing fees from the users.

Table 3.18a: Distribution of different fund raising activities by type of sample libraries

Fund raising activities	Health		Population		Nutrition		HPN		All Libraries	
	N	%	N	%	N	%	N	%	N	%
Present status of fund raising activities										
Yes	3	25.0	-	-	1	8.3	2	16.7	6	50.0
No	1	8.3	3	25.0	1	8.3	1	8.3	6	50.0
Type of activities										
Fee based service	-	-	-	-	-	-	-	-	-	-
Membership subscription	3	50.0	-	-	-	-	1	16.7	4	66.7
Charge from EDD	-	-	-	-	-	-	-	-	-	-
Internet browsing fee	2	33.3	-	-	-	-	1	16.7	3	50.0
Photocopy and reprographic charges	3	50.0	1	16.7	-	-	2	33.3	6	100.0
Future fund raising program										
Yes	1	16.7	3	50.0	1	16.7	1	16.7	6	100.0
Type of activities										
Fee based service	2	28.6	-	-	-	-	1	14.3	3	42.9
Membership subscription	1	14.3	1	14.3	-	-			2	28.6
Charge from EDD	2	28.6	-	-	-	-			2	28.6
Internet browsing fee	1	14.3	-	-	-	-	1	14.3	2	28.6
Photocopy and reprographic charges	2	28.6	-	-	-	-	1	14.3	3	42.9
Not yet set	-	-	2	28.6	1	14.3	-	-	3	42.9

About 50% libraries that have fund raising activities at present have intention to introduce charges for library services in near future. In response to the question "what will be the activities", about 43% librarians opined that the activities have not yet been set while another 43% ensure that they are going to introduce charge for photocopy and 28.6% think that they are going to

impose membership charge, Internet browsing and charge for electronic document delivery (EDD) services. It is interesting to note that most of the libraries in the population and nutrition sector have been refrained from remained no responding to the question of fund raising activities.

3.8 Library building and infrastructure

About 92% library buildings in the sample libraries are within the main building of the parent organization. Only one sample library- National Health Library and Documentation Center (NHLDC)- is working in its separate building (Annex Table 10). It needs to be mentioned here that 25% sample libraries (Directorate of Family Planning Library, Ministry of Health and Family Welfare library, Seminar Library, Department of Population Science of Dhaka University, and National Institute of Public Health and Nutrition Library) are the libraries in a single room. However, the average size of the sample libraries is 7028 sqft with average size of the reading room being 2761 sqft, reference section 2218 sqft, stack area 1862 sqft, technical processing 627 sqft, administration and finance 1153 sqft. The seating arrangement was discussed in the earlier section (section 4: services) in detail.

Table 3.18b: Distribution of space management of the sample libraries (average sqft)

Type	Health	Population	Nutrition	HPN	Group Total
Reading room	5425	550	900	2661	2761
Reference section	1850	120	-	3636	2218
Stack area	2375	733	825	2999	1862
Technical processing	413	125	150	1687	627
Administration and staff rooms	613	276	455	3058	1159
Total space	9495	1683	2255	12267	7028

Three sample libraries (25%) are fully air conditioned and 41.7% libraries have no air conditioning system. The rest of the libraries are partially air conditioned. Annex table 11 shows that the reading room in 25%, stack areas in 8.3%, processing department in 16.7% and administration department in 33.3% libraries are air conditioned. It is interesting to note that apart from the fully air conditioned libraries only one sample library's stack room is air conditioned. But we know that for the sake of longevity of the information

resources library authority should install the first air conditioning machine at the stack room.

Table 3.19: ICT and other infrastructural facilities available at the sample libraries

Equipment and facilities	NHLDC	ICDDR,B	BSMMUL	DMCL	DGFP	BIRDEM	NIPORT	MOHFW	NIPSOM	DPS,DU	IN, DU
Computer	10	9	18	0	1	4	2	1	3	1	0
Printer	4	8	2	0	1	3	1	1	1	1	0
Internet connection	1	1	1	1	0	1	0	1	1	1	0
Telephone/Fax	4	2	2	0	1	3	1	1	1	1	1
IPS/UPS/generator	10	9	0	0	1	3	1	1	2	1	0
Photocopy machine	2	1	1	2	1	2	0	1	1	0	0
Audio-visual equipment	0	0	0	0	0	0	0	0	0	0	0

Overall picture of necessary infrastructural facilities in the sample libraries is shown in table 3.19. It is evident from the annex table 12 that except two sample libraries in the nutrition sector all libraries have on an average five computers, two printers, one Internet connection, two telephone line and a photocopy machine. Though once upon a time the libraries include different types of audio-visual aids, no library includes such type of resources in the libraries.

3.9 ICT and library automation

Library automation is the general term that is used when information communications technologies (ICT) are used to replace manual systems in the library. The application of ICT may be to a single function only as in the creation of an electronic catalog or index or to all sub-systems in the library. The system may or may not be integrated and may or may not be applied on a local area network. The functions that may be automated are any or all of the following: circulation, cataloging, acquisition, serials management, and reference.

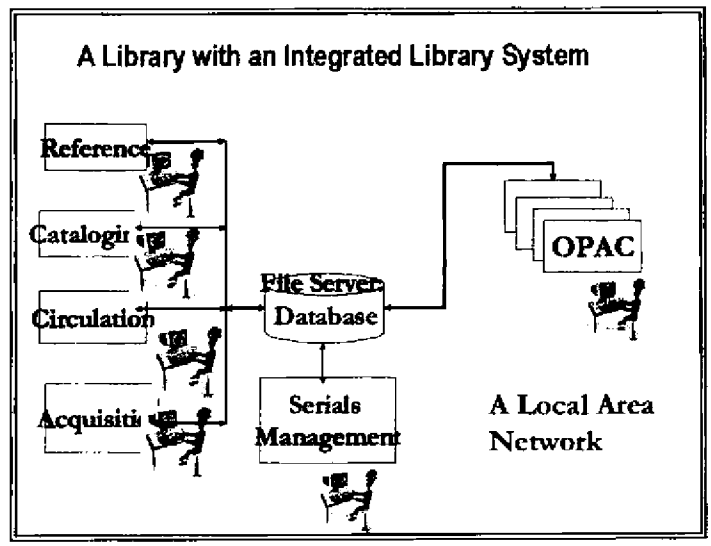


Figure 3. 4 Source: Unesco ICT manual for Librarians

The library management system is integrated if it is sharing a common database to perform all the basic functions of a library and it may be called fully automated library system (UNESCO 2001: 3). An integrated library system enables the library to link circulation activities with cataloging, serials management etc. at any given time. To be fully automated the library management systems should have the following functional modules: cataloging and OPAC, circulation, acquisitions, serials management and inter-library loan module. Besides the functional modules, an automated library system requires three other basic requirements- Operating system, Database and Graphical User Interface- and two optional requirements- network and standard. Thus an automated library system is characterized by:

i. Functional modules – most systems offer the basic modules cataloging, OPAC and circulation in a library software package, and the other functions such as acquisition, serials control, inter-library loan (ILL), and Web OPAC are usually provided as optional add on modules or part of a main module.

ii. Operating system – each system may work for a particular OS like Windows, UNIX etc. or may work for both Windows and UNIX environment.

iii. Database system – major systems normally make use of RBDMS offered by different vendors like Oracle, Informix, MS SQL, MS Access etc.

iv. User interface – the use of a Graphical User Interface (GUI) is quite the norm for current systems because users find it easier to work with and it allows a wide range of tasks that could be accomplished with a click of a mouse.

v. Network architecture – major systems run on the client-server architecture and use TCP/IP to communicate across networks (LANs and WANs).

vi. Library automation standards – provisions for library industry standards such as MARC and Z39.50 are normally integrated with major systems.

Realizing the conceptual boundaries of library automation and from the real observation on automation practices in the sample libraries it can easily be concluded that there is no fully automated library system in the country in the true sense of the term. About 50% sample libraries have neither any automated library activities nor any plan to initiate such activities in near future (table 3.20). It is interesting to note that no library in the nutrition sector is automated and they have no plan for automation in future. Only one library (NIPSOM) has recently taken initiative to computerize library activities. However, it is also evident that a large number of libraries have started computerization of library activities. Around 42% libraries have been using computer and some other information and communication technologies or trying to establish of computer based library services.

Table 3.20: Automation status of the sample libraries by type

Automation status	Health		Population		Nutrition		HPN		All	
	N	%	N	%	N	%	N	%	N	%
Fully automated	-	-	-	-	-	-	-	-	-	-
Partially automated	2	16.7	1	8.3			2	16.7	5	41.7
Initiating automation/ proposal submitted	1	8.3	-	-	-	-	-	-	1	8.3
Neither automated nor any proposal in near future	1	8.3	2	16.7	2	16.7	1	8.3	6	50.0
Total	4	33.3	3	25.0	2	16.7	3	25.0	12	100.0

During investigation of the libraries, the librarians were asked aboutspecific areas of automation process in the structured questionnaire. About 42% libraries having partial library automation activities (table 3.20). The questionnaire was designed following specific area of activities and services rather than specific functional sub-systems.

3.9.1 Acquisitions activities

Acquisitions module automates the acquisition process that includes ordering, receiving, claiming materials from suppliers, return, cancellations, maintain statistics, and for some management and accounting activities. With ICT, acquisition of library materials may be done online. The acquisitions module enables the librarian to create records of items to be ordered and to print out order slips in cases where the order must be transacted by ordinary mail. Recent developments have provided electronic means of ordering items and paying for them. A lot of information is now available on the Web about online ordering of books and other materials. The module may also supply accounting information relating to acquisitions activities. Table 3.21 shows that the Library and Information Service Unit of ICDDR,B in the only library having computer based acquisition system. However, it is to note that the acquisition process of LISU is not fully automated rather in practice they search publisher's catalog, communicate with publishers, vendors; perform budgetary calculations with the acquisition sub module.

3.9.2 Cataloging module

The cataloging module is used for creation, storage, retrieval and management of the bibliographic records and/or indexes. It also defines the

record format used in the database and provides for authority control author, subject headings, etc. Usually there are two different interfaces for search and retrieval of the electronic catalog:

i) Used by the catalogers which allow them to do specific tasks in maintaining the library collection database, and
ii) Online Public Access Catalog (OPAC) provided for users that allow them to search and display the results.

Cataloging modules usually have some form of authority lists for authors. Some systems even have a subject headings list for ease of assigning subjects to items. All the 41.7% sample libraries use computer in processing work. It needs to be mentioned that the term processing is confined in bibliographical database maintenance work mainly. All these five sample libraries maintain bibliographical database but no computerized effort has been observed for indexing, news clippings, etc.

3.9.3 Circulation control

Circulation module handles circulation activities such as: lending, return, renewal, place on hold, manages materials type, location and status, patron database, type, profiles, privileges and other related information and transaction. It may or may not have add value functions like import, export, backup, database restoration, inventory, and report generation. Some systems also support integration with security systems that complements the self check-in and check-out features of the circulation module.

A circulation module makes use of only two sets of numbers to record a transaction: the item number (barcode number, accession number) and the user number (student, faculty number, user ID number). A program can be easily written for such a transaction. In practice, however, the circulation module is linked to the bibliographic database so that the description of the item can be displayed and the OPAC can also display the status of the item, whether it is on the shelf or on loan to a borrower.

More sophisticated systems are linked to security systems with self-check-out and check-in system which is a self-service system for borrowing and returning materials. To borrow books, the borrower simply goes to the loans terminal and inserts a borrower's card. The system then asks for the borrower's pin, and once recognized as a library member, the system then asks the borrower to place the book on the terminal so that it can scan the book's barcode. After the terminal has read the barcode, the loan is processed and the security strip is demagnetized so that the borrower can take the book out without alerting the security system. Returning books is an easier procedure. Only the barcode of the book needs to be scanned by the returns terminal. The computer processes the transaction immediately after scanning the barcode and deletes the loan formerly issued to the borrower. In practice no sample library in the said sector has yet been able to establish circulation system; they simply follow manual circulation registers and membership card in issuing and receiving publications.

Table 3.21: Automation status in different areas of application by the sample libraries

Area of applications	NHLDC	ICDDR,B	BSMMU	BIRDEM	NIPORT
Acquisition/procurement activities		√			
Technical processing	√	√	√	√	√
Circulation control/ lending					
Reference/Information service		√			
Periodical/serial control		√			
Bibliographical services		√		√	√
Reprographic works					
Inter-library loan transaction					
Computerized CAS/SDI					
Administration and management	√	√	√		√

3.9.4 Serials control module

Like acquisitions module, serials control manages placing, canceling, claiming orders, returning defective, unwanted, unordered material; and accounting and statistical information. The module also provides a system for recording

issues and keeping track of undelivered issues by generating claim reports. Serial ordering may also be done online.

Not all integrated library systems have this module. Large libraries with large serials subscriptions require the serials control module because it provides them with a more efficient means of managing serials. The system usually alerts the library when claims have to be made. It also enables the library to automatically record arrivals through the barcode attached to the serial. Only a single library-LISU of ICDDR,B (20.0% of the libraries that have library automation activities) in the sample area has serial control functions.

3.9.5 Inter-library loan

An inter-library loan (ILL) module provides the staff with an information management system for inter-library loan transactions. This includes the ability to automatically monitor loans and accounts, make claims, put holds on materials being borrowed, etc. It can also monitor the library's ILL activities, e.g. the number of items borrowed by individual clients, from where, for whom, etc. This module is seldom required except by libraries, which have very heavy ILL transactions. There are two major networks in the field of health and population sector: HALLIS in health sector and POPIN in the population sector. But in reality such type of networking are inactive. As a result, no inter library resource sharing system has yet been established.

3.9.5 Reference and Information services

From library automation perspective information has been defined as the physical representation of abstractions that can cause a change in a person's state of knowledge. It can be a word, a printed page, a museum object, a diagram, or a whole book, article or audio-visual material (Ellis and Merete: 1997). Materials acquired are now combinations of print, digital and multimedia. Catalogs are now online as OPACs or WebPACs. Automation has also changed the way librarians manage and provide information. However, information seeking behavior, information services and reference

answering patterns in the health, population or information sector libraries that are already using ICT facilities are not worth mentioning. In most of the libraries computer based information or reference services are still confined to the bibliographical database searching if available and Internet browsing. This indicates that the real electronic information storage, searching, retrieval and dissemination systems are still a distant dream in Bangladesh, let alone some of the sophisticated electronic information services e.g. Electronic Document Delivery (EDD), ICT based SDI, Webliographic services, electronic repackaging or information consolidation.

Table 3.22: Automation status in different areas of application by type of the sample libraries

Area of applications	Health		Population		Nutrition		HPN		All Libraries	
	N	%	N	%	N	%	N	%	N	%
Acquisition/procurement activities	-	-	-	-	-	-	1	20.0	1	20.0
Technical processing	2	40.0	1	20.0	-	-	2	40.0	5	100.0
Circulation control/ lending	-	-	-	-	-	-	-	-	-	-
Reference/Information service	-	-	-	-	-	-	1	20.0	1	20.0
Periodical/serial control	-	-	-	-	-	-	1	20.0	1	20.0
Bibliographical services	1	20.0	1	20.0	-	-	1	20.0	3	60.0
Reprographic works	-	-	-	-	-	-	-	-	-	-
Inter-library loan transaction	-	-	-	-	-	-	-	-	-	-
Computerized CAS/SDI	-	-	-	-	-	-	-	-	-	-
Administration and management	1	20.0	1	20.0	-	-	2	40.0	4	80.0

3.9.6 Library administration and management

Besides technical aspects of Librarianship, automation work captures some administrative and management functions. The activities include official communications, desktop publishing, inventory control, organizational MIS, financial management or accounting, annual reporting, presentation, audiovisual functions etc. About 80% libraries use computers in these management and administrative works.

3.9.7 Software use

Around 42% libraries and information centers in the sample areas use computer and related technologies. During designing data collection instruments library software were broadly categorized into two groups:

database software and other supporting software. The study table 3.23 shows that among the libraries that are maintaining database, around 80% are using ISIS software of UNESCO with 40% use CDS/ISIS and 40% WINISIS. 60% libraries use SQL server and MY-SQL. These libraries use vendor based customized software having option to publish the database on the web. The study result also shows that all the libraries having computer technology use MS Office software for office automation. All the libraries use Windows based Internet explorer and Acrobat read-writer software. It is to note that the sample libraries in the nutrition sector do not use any computer.

Table 3.23: Trends in software use by the sample libraries

Type of software	Health		Population		HPN		Total	
	N	%	N	%	N	%	N	%
Database software used								
CDS/ISIS	1	20.0	1	20.0	-	-	2	40.0
WINISIS	1	20.0	1	20.0	-	-	2	40.0
SQL server/ MYSQL	1	20.0	-	-	2	40.0	3	60.0
Total	2	40.0	1	20.0	2	40.0	5	100.0
Other software used								
MS word	2	40.0	1	20.0	2	40.0	5	100.0
MS Excel	2	40.0	1	20.0	2	40.0	5	100.0
MS Power point	2	40.0	1	20.0	2	40.0	5	100.0
Adobe Acrobat	2	40.0	1	20.0	2	40.0	5	100.0
Photoshop/Illustrator	1	20.0	1	20.0	-	-	2	40.0
Total	2	40.0	1	20.0	2	40.0	5	100.0

3.9.8 Network status

A group of computers and other devices connected together is called a network, and the concept of connected computers sharing resources with each other in a meaningful way may be called networking. The sharing may be of exchange of information or other resources e.g. hardware, software even human resources. The prime objective of networking is to share resources. Categorically the sharing may be expressed as follows:

i. Sharing information: Human being feels the necessity for information for different types of decision making, understanding and research.

Information network ensures access and retrieval of essential information from both local and remote information sources.

ii. Sharing hardware resources: A network allows user to use hardware resources attached with the system though s/he does not directly possess the device(s). These may be a printer, fax modem, scanner, any secondary storage etc.

iii. Sharing software: A network member can enjoy all sorts of software resources that exist over the network.

iv. Preserving information: One of the most important reasons of developing information network is to preserve information at a central location so that one can access huge amount of data from a remote location.

v. Protecting information: network provides more security than that of a standalone PC. As it preserves a large amount of data it maintains some security and access control and manipulation behavior.

Computers in 60% libraries are connected with LAN. 66.6% LANs are maintained by the expert personnel having ICT background and 33.3 by the library professionals. Around 60% networks have file sharing, database sharing and hardware sharing facilities. While 40% networks share message sharing and 20% share resource person through the networks. Computers in the population and Nutrition sector do not have any network. Only a single library in the sample areas -LISU of ICDDR,B- (20%) maintains web server for hosting their information product on the web. This library maintain server through a hired domain from a local ISP.

Table 3.24: **Network Status of the computers used by type of sample libraries**

Aspects of LAN	Health		Population		Nutrition		HPN-		All-Libraries	
	N	%	N	%	N	%	N	%	N	%
LAN exist	1	20.0	-	-	-	-	2	40.0	3	60.0
LAN operator										
Network manager	1	33.3	-	-	-	-	1	33.3	2	66.6
Library staff having networking training	-	-	-	-	-	-	1	33.3	1	33.3
LAN Services										
File sharing	1	20.0	-	-	-	-	2	40.0	3	60.0
Discussion group/New group	-	-	-	-	-	-				
Message sharing	1	20.0	-	-	-	-	1	20.0	2	40.0
Bibliographical database sharing	1	20.0	-	-	-	-	2	40.0	3	60.0
hardware sharing	1	20.0	-	-	-	-	2	40.0	3	60.0
Resource person sharing		-	-	-	-		1	20.0	1	20.0

Chapter 4

Findings of the Survey- II

Information Needs Assessment and Seeking Behavior

Chapter Outline

Information Needs Assessment

4.1.1 Introduction

It is said that Information need in the assessed information requirement asked for and relevant to the users' interest deduced by the information system or any authority (Alam: 1997). People seek information when they realize that there is a gap between their knowledge and the knowledge required to solve a particular problem at hand. People feel the necessity for a variety of information and seek them in different sources. This information seeking activities is an indispensable part of our daily life. On the other hand, the ultimate goal of any information system is to provide information that meets the users' information needs. The gap is that, it is often found that the information seekers do not always know what kind of information is available or where to find it. By the same token information providers do not always know how to locate the user and how to identify and satisfy the information needs of the user. There is a need, therefore, to develop the means to collect and analyze the need of users and information seeking behavior and to measure the quality of services in terms of accuracy, relevancy, quantity and timeliness.

From professional point of view information needs of an organization can be addressed from the following points of view: (i) appropriateness and adequacy of the learning materials of all formats, (ii) timeliness of the information services, (iii) logical but user friendly arrangement of information resources for easy accessibility, (iv) comfortable seating arrangement, congenial study environment, and (v) the availability of adequate skilled staff for better job performance and cooperation. In the study the user community was asked on the aforesaid issues to recognize their expectations from the information system and assess the system limitations.

4.1. 2 Types of users

The category of user groups is heavily dependent on the nature of the parent body and the information systems. During investigation of the 12 sample libraries the following categories of users were mainly identified:

i. Researcher
ii. Administrator / policy maker
iii. Doctor
iv. Teacher
v. Student / Trainee.

Thus, the analyzed data in the study have been distributed mainly by type of the sample libraries and user groups. According to the methodology of the study the ratio of library and user was 1:10; i.e. 120 users were interviewed with structured questionnaire in 12 sample libraries. The Figure 4.1 shows the distribution of different types of user by sex. Annex table 13 shows the distribution of user groups by type of sample libraries of their main focus. Among the user groups 20.8% are researchers in health, population or nutrition field. About 14.2% interviewed users are managers, administrators, policy makers, planners or decision-makers engaged in coordinating all sorts of promotional activities in the concerned sector. About 19.3% are practicing doctors, 23.3% population are faculty member, trainer or instructor, and 22.5% are students or trainees. It is to be mentioned that in the last two groups (teacher and student) there were some doctors working as faculty members and student/trainees pursuing higher degree. From sectoral point of view it is evident that 25.0% users are working in the field of health; 41.7% in population, 16.7 in nutrition and rest 16.7% in health, population and nutrition (HPN) sector.

4.1.3 Types of Information need

Modern society is information based. People seek information when they realize that there is a gap between their knowledge and the knowledge required to solve a particular problem at hand. All the time, people feel the necessity for a variety of information and seek them in different sources.

annex tables 14.a, 14.b, 14.c, and 14.d. Table 4.2 presents summary of the information sources consulted to meet different categories of information needs by the users; the sectoral distribution of the information sources have been presented in the annex tables 15a, 15.b, 15.c and 15.d.

Table 4.1: Distribution of institutional supports for different types of information needs by category of institutions

Institutional support	General		Supporting		Comprehensive		Recreational	
	N	%	N	%	N	%	N	%
Institutional library	27	22.5	67	55.8	96	80.0	17	14.2
Nearest library /information center	24	20.0	70	58.3	96	80.0	18	15.0
Personal collection/ library	71	59.2	90	75.0	85	70.8	63	52.5
Colleague/Friend	59	49.2	68	56.7	69	57.5	22	18.3
Internet	66	55.0	74	61.7	83	69.2	78	65.0
Media (News paper/ TV/Radio)	101	84.2	29	24.2	18	15.0	115	95.8
Other	2	1.7	-	-	-	-	1	.8

Table 4.1 shows institutional library can support only 22.5% users to meet general information; in the same way libraries nearby the user's residence or working place hardly play significant role in providing adequate facilities to meet the general information. In other words, it can be said that existing libraries in the country have not been developed to offer general information for its clients. To meet the general information needs most of the users (84.2%) are dependent on media. Another significant finding is that though about 67% sample libraries have limited scale of Internet facilities, around 55% user log into the Internet for general information. Another significant source of information of the users are friends and colleagues and their own collection. 49.2% users opined that they are relying upon their friend and colleagues for general information. Personal collection is also an important medium (59%) for meeting general information needs. This is another indication that personal collection trends is improving day by day.

The top ranking information source used to meet general type of information needs is newspaper. 111 respondents (92.5%) have reported that they use newspaper to meet the daily information. The second top listed source is TV and Radio. 84 respondents (70%) watch TV and/or listen radio to meet day to day information needs. Here it is to say that no user depends on a single source; rather they use multiple sources to collect required information. Other

sources of information consulted by the users according to priority order are: Internet/web resources (56.7%), literary books or magazine (50.0%), Personal collection (44.2%), Colleagues/friends/ Researchers (36.7%), Encyclopedias (15.0%), Statistical sources (14.2%), Handbook guide manual (7.5%), other reference collection (7.5%), Text books (4.2%), Dictionary (3.3%), Journals/Articles (2.5%), and In-house CD-ROM literature (0.8%). From professional point of view, it is to say that some sources such as text book, journal articles, etc. have insignificant role in meeting daily information needs.

ii. Supporting information

Like the Decision Support System (DSS), supporting information aids to decision making and operational works. Researchers, administrators, policy makers, teachers or students need support information during concerned working. Around 55% users used to receive supporting information from their institutional libraries, 58% from nearest libraries of the users premises. Personal collection is one of the major sources (75%) of their supporting information needs while the role of friends and colleagues (56.7%) is not insignificant. For supporting information about 74% users used to access Internet while 24% users reported that besides these sources to some extent media- Radio, TV, etc. support them.

To meet supporting information needs different types of reference collections play leading roles. According to users' reporting, statistical sources and handbooks/manuals are the best used collections (60.8%). Other sources and their utility ranks are mentioned below as reported by the users: Internet/web resources (58.3%), personal collection (46.7%), encyclopedias (45.8%), personal contact with colleagues/friends/ researchers (43.3%), newspaper (36.7%), other reference collections (28.3%), literary books/magazine (16.7%), Text books (16.7%), dictionary (16.7%), Radio-TV (11.7%), journals/articles (6.7%), in-house CD-ROM literature (4.2%).

Table 4.2: Information sources consulted for the different types of information needs

Information sources	Types of Information need							
	General		Supporting		Comprehensive		Recreational	
	C	%	C	%	C	%	C	%
Text books	5	4.2	20	16.7	82	68.3	-	-
Journals/Articles	3	2.5	8	6.7	114	95.0	2	1.7
Dictionary	4	3.3	20	16.7	5	4.2	2	1.7
Encyclopedia	18	15.0	55	45.8	20	16.7	-	-
Newspaper	111	92.5	44	36.7	5	4.2	97	80.8
Statistical sources	17	14.2	73	60.8	59	49.2	-	-
Handbook guide manual	9	7.5	73	60.8	22	18.3	-	-
Other reference collection	9	7.5	34	28.3	6	5.0	-	-
literary books/magazine	60	50.0	20	16.7	2	1.7	78	65.0
OPEC	-	-	-	-	9	7.5	-	-
Bibliographical databases	-	-	-	-	39	32.5	-	-
In-house CD-ROM literature	1	.8	5	4.2	20	16.7	-	-
Internet/web resources	68	56.7	70	58.3	81	67.5	4	3.3
Colleagues/friends/ Researchers	44	36.7	52	43.3	43	35.8	13	10.8
Personal collection	53	44.2	56	46.7	65	54.2	26	21.7
Radio TV	84	70.0	14	11.7	-	-	106	88.3
Total	120	100.0	120	100.0	120	100.0	120	100.0

iii. Comprehensive information

Information needs for comprehensive literature arise from the initiation of study and research. Comprehensive literature searching begins with the recognition of the problem and ends with a series of functional steps (David: 2002, 2). These include: understand and define problem; identify, evaluate and select relevant resources; formulate query; execute search; examine results; decide what is valuable to extract; extract information; assess information extracted and decide to iterate, monitor developments or stop search; synthesize by restructuring and repackaging the information into a new form that meets the defined problem. The survey show that about 80% users have institutional library and nearby library supports. Around 71% users have reported that they have some personal collection to meet their research information needs on the other hand 57.5% has reported that they have information support from friends and colleagues. Data in table 4.1 also indicate that the use of Internet for the purpose of study and research is rapidly increasing.

As information needs for comprehensive literature searching is basically research oriented, it needs recent and up to date information. Thus about 95% respondents reported that their first priority is recent research articles. About 68% users seek text books to grasp the research concepts and 67.5% use Internet in research work. Data in table 4.2 clearly indicate that major researchers maintain some personal collections in their respective field of study and about 54.2% users maintain personal collection/library. Other sources used in comprehensive information needs are: statistical sources (49.2%), supports from colleagues/friends/ researchers (35.8%), bibliographical databases (32.5%), handbook guide manual (18.3%), encyclopedia (16.7%), in-house CD-ROM literature (16.7), other reference collection (5.0%), newspaper (4.2%), dictionary (4.2%), and literary books/magazine (1.7%).

iv. Recreational information

Recreational information are those resources and services that are usually consulted during leisure time. It includes newspapers, magazines, local or foreign language literature, or audio-visual aids in the library or even the entertainment resources over the Internet. About 96% users reported that electronic media is their main recreational support. Though the sample libraries are basically special and academic libraries, they should have provision for meeting all sorts of information needs of the concerned users. It has been found that only 14.2% users can have some recreational information in the institutional libraries and 15% users in the nearby libraries. It also indicates that the libraries situated at the users premises are also not well equipped to meet the recreational facilities. Personal collection (52.5%) is also an important source for recreational needs of individuals; about 18% users share recreational resources with their friends and colleagues. Besides the sample libraries there are some 474 institutions in the country without any libraries of their own (Ahmed 1991: 2). But the scientists of these institutions also need timely and valid information and literature to keep themselves abreast of up-to-date knowledge.

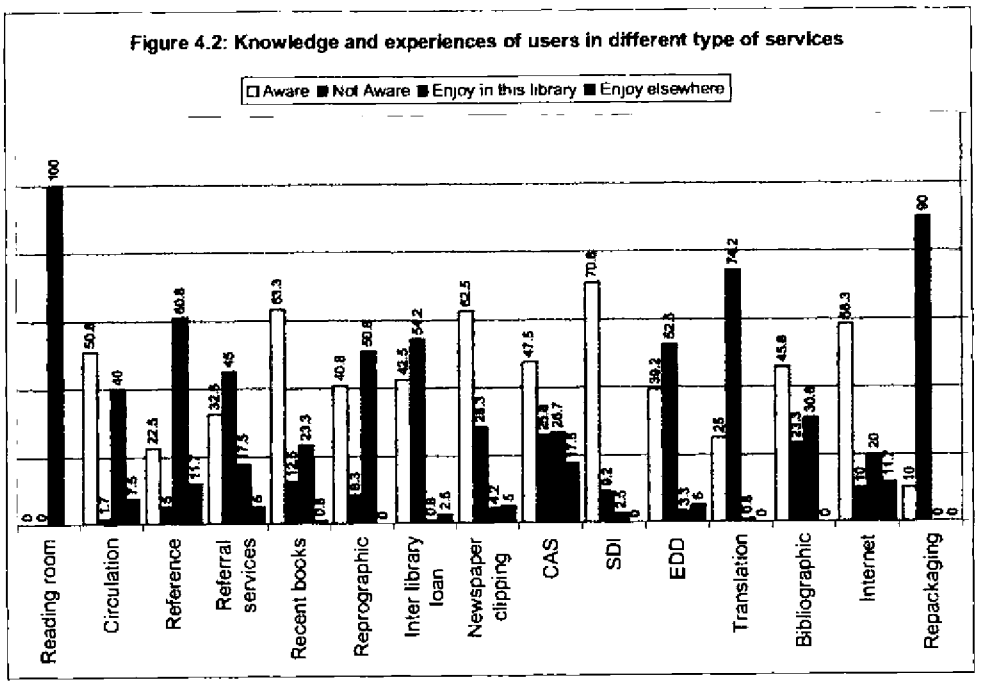
4.1.4 Library services

The ultimate goal of librarianship is effective library services. By effective library service we mean the provision of right information at the right time in the most convenient format necessary for a user to reach his or her goals in a particular situation. The purpose of library services is to provide access to recorded information and ideas (both internal information resources of the library and external resources outside of the library) relevant to the users' requirements. Apart from conservation, modern library service is involved with wide range activities each of which is called a particular library service. During investigation of the sample libraries users and librarians and library users have been asked about the typical library services in separate questionnaires. The responses of the librarians have been analyzed and presented in chapter 3. In the user's questionnaire each user has been asked to report his/her experiences with each category of services. The experiences are categorized into four groups: 'Aware', 'Not aware', 'Enjoy in this library', 'Enjoy elsewhere'. The responses have been summarized in the table 4.3. The sector wise distributions have been presented in the annex tables 15a, 15b, 15.c, 15.d and 15.e.

4.1.4.1 Reading room services

Reading room service refers to the study arrangement in the library. It includes a comfortable seating arrangement with nearby stack area and bibliographical tools. Although a few sample libraries have their separate reference section but in many libraries reading room and reference section is a combined concept.

In the reading room the users can select books of his/her choice, study at the study table and leave the books on the table. Besides reading facilities, some libraries have reprographic facilities in the reading room. Be it large or small, according to the study data, all the users reported that they are enjoying reading room facilities in their libraries. The size and pattern of the reading rooms are not unique; no library maintains reserve reading rooms carrel system.



Source: Survey data

4.1.4.2 Circulation

It refers to the lending services. In the service a user can borrow some publications for a certain period outside the library. Depending on the purpose, ability and policy of the library in terms of loan time, number of books to be lent may be different. Some circulation systems maintain the provision for reservation of publication and fine system for over dues. Around 50% respondents of the sample library have reported that they are aware of the circulation service but there is no provision for the said services whereas two library users reported that they have no idea about circulation system let alone the enjoyment. 40% library user in the health population and nutrition sector libraries and information centers enjoy borrowing facilities from the parent library while 7.5% user have no borrowing facilities from the parent library but they have privileges from other libraries.

4.1.4.3 Reference and referral services

In the age of information explosion reference and information services together with referral services have become an integral part of library services. Usually these types of services are personalized services and provide answers to specific questions. Although around 25% sample libraries have no reference activities at all, about 60% users are enjoying reference and information services. In the previous section it has been stated that around 66.6% sample libraries have no separate reference or information service section/department. However they maintain some reference collections such as dictionaries, encyclopedias, statistical sources, etc. and try to answer specific query of the users.

Referral service is a self explaining issue where the users are referred to specific places/organization/sources for specific information by the user. However, the concepts 'reference' and 'referral' have been misleading among the general public. They often think that reference, referral and information service connote the same. Most probably that is why around 45% respondents have reported that they are not aware of the referral services. About one-third users have the misconception that there is a service available in the library named referral services but are unavailable in the library of the parent body. Only 17.5% users can avail the services from the parent body and 5% from else where.

4.1.4.4 Reprographic services

Reprography is the complete process of producing multiple documents from an original source. In the recent time, photocopying is the most popular mechanism for reprography. Besides, there are other techniques available e.g. microforms, stencil, typing, COM (Computer Output on Microforms). About 51% users have reproduction facility from the parent institution library. About 41% users have reported that they are aware about reprographic services but they do not have such facilities.

4.1.4.5 Inter-library loan and newspaper clippings

In response to the library questionnaire the librarians have reported that only 25% libraries (NHLDC, ICDDR,B and BIRDEM) library has inter-library loan program under HeLLIS international network. In fact from the inception of the library network in the country, no network is full fledged and working properly. So inter-library loan cooperative work, library cooperation, library networking concept all are still theoretical in most cases. Around 54% user have no idea on inter-library loan facilities and 42.5% have ideas but no physical facilities for such sort of services.

Table 4.3: Distribution of experiences with different types of library services by category of institutions: all sector libraries

Library and information services	All libraries							
	Aware		Not Aware		Enjoy in this library		Enjoy elsewhere	
	C	%	C	%	C	%	C	%
Reading room services	-	-	-	-	120	100.0	-	-
Circulation/Loan/Borrowing privileges	61	50.8	2	1.7	48	40.0	9	7.5
Reference/information services	27	22.5	6	5.0	73	60.8	14	11.7
Referral services	39	32.5	54	45.0	21	17.5	6	5.0
Latest addition list books	76	63.3	15	12.5	28	23.3	1	.8
Reprographic/reproduction service	49	40.8	10	8.3	61	50.8	-	-
Inter library loan service	51	42.5	65	54.2	1	.8	3	2.5
Newspaper clipping service	75	62.5	34	28.3	5	4.2	6	5.0
Current Awareness Service	57	47.5	31	25.8	32	26.7	-	-
SDI service	21	17.5	85	70.8	11	9.2	-	-
Electronic/Digital document delivery	47	39.2	63	52.5	4	3.3	6	5.0
Translation services	30	25.0	89	74.2	1	.8	-	-
Bibliographical service	55	45.8	28	23.3	37	30.8	-	-
Network/Internet services	70	58.3	12	10.0	24	20.0	14	11.7
Information consolidation and repackaging	12	10.0	108	90.0	-	-	-	-

4.1.4.6 CAS and SDI

Due to the enormous growth of scientific and technical literature, it is becoming more and more difficult to keep themselves up-to-date and well-informed in the fields of their specialization. Current Awareness Services

(CAS) and Selective Dissemination of Information (SDI) enable the researchers to keep themselves up-to-date and well informed in their field of specialization. It is one of the most appropriate ways to bring the resources of the library and information centre to the notice of the users. This, in turn, leads to greater demand for library services, giving opportunity to the library to prove its value and justification for the money spent on it. Surprisingly about 27% users enjoy CAS and only 9.2% users enjoy SDI services. More interestingly 70.8 % users are not aware about SDI and 25.8% about CAS. On the other hand, 47.5% users have knowledge on CAS and 17.5% on SDI but they have no opportunity to have the benefit of these services neither from the library of the parent organization nor from other libraries.

4.1.4.7 Electronic document delivery (EDD)

Electronic information delivery in the networked information world has changed the scope and magnitude of information seeking behavior as well as perspective and behavior of librarianship. Though technological innovations have got in touch with the librarianship in Bangladesh, the prevailing outcome is not so significant yet. In the previous chapter we have mentioned that only two sample libraries (16.6%) have reported that they have been providing EDD services at a limited scale. The responses in the user questionnaire down grade our aspiration further. According to the table 4.3, only 4 users (3.3%) have access to electronic information resources of the libraries of the parent body and 5% to other libraries. About 53% users in the health population and nutrition sector libraries do not have any knowledge on electronic or digital information, on the other hand around 39% users have been informed about electronic resources but their library lacks provision for such services.

4.1.4.8 Bibliographical and translation services

All kind of libraries- small, medium or large- have some bibliographical functions. It may take the form of catalog, bibliographies or reading list. The librarians in their respective questionnaires reported that around 50% libraries

prepare different types of bibliographies reading list in response to the users' request but response of the user tells a different story. According to table 4.3, about one third of the sample users (30.8%) have received bibliographical services form their library. About 23% users do not have any idea about bibliographical services and the rest 45.8% have knowledge on it but have no access to such sort of services. Though millions of documents (published or unpublished) are coming out on the web in different languages, no library takes necessary steps for bibliographical control and translation services. Even 75% users of those libraries do not know that libraries are supposed to provide such kind of services.

4.1.4.9 Access to network/Internet resources

Today's library is not confined with an organized collection in a building rather it encompasses the entire information-transfer cycle, from the creation, structuring, and representation of information to its dissemination and use (Richard 1993: 97). This moves librarians beyond their present role of storage, bibliographic organization, and retrieval into the world of information transfer and creation. The changes occurring in the networked information environment increase the opportunities for librarians to shift and broaden their involvement in the information and scholarly process. It is shown in the previous chapter that around 50% libraries have Internet connection and 25% libraries maintain LAN, and, of them, only one (8.3%) maintains web server. The users profile shows that 20% users have access to network and/or Internet resources from the library and another 11.7% users have to collect Internet resources from outside the library such as cyber café, Internet connection at home or office or elsewhere. One positive aspect of user studies is that though around 58% users have no access to Internet resources, they know and have shown interest in digital information resources. Still today 10% library users are not at all aware of network, Internet or network information resources.

4.1.4.10 Information consolidation and repackaging

Information consolidation activities are used to define the responsibility exercised by individual, departments or organizations for evaluating and compressing relevant documents in order to provide definite user groups with reliable and concise new bodies of knowledge (Seetharama 1997: 2). In information consolidation public knowledge specially selected, analyzed and possibly restructured and repackaged for the purpose of serving some of the immediate decisions, problems and information needs of a defined clientele or social group who otherwise may not be able to access and use the knowledge efficiently and effectively which is available in the great amount of documents or in its original forms. Repackaging of information is rearrangement of physical media and/or forms in which information has been presented which is tailored to the requirement of a specific clientele in more understandable, readable, acceptable and usable format. In the recent situation of knowledge based society this services play critical role in information creation, exploration and manipulation. Unfortunately such sort of services is not provided in Bangladesh and about 90% library and information users absolutely know nothing about this service.

4.1.5 Expected mode of information delivery

Technological innovations open several new ways and means of information delivery to concerned user. The realistic scene is that users in our country acquire information through physical visit to the library. However, they want to receive information in sophisticated ways and means. During survey the users were asked on the mode of information delivery they expected from the sample library. The pattern of their aspirations is depicted in table 4.4 by type of user. The data have also been presented by category of institution in the annex table 17. According to table 4.4 maximum user take the opportunity to select multiple options information delivery. Around 85% users of all categories have the desire to download information from their respective libraries through email attachment and library web site. 74.2% users think that they should pay physical visit to the library for information acquisition. Beside

this, about 29% expected to have EDD, 19.2% through telephone or fax and 6% by the messenger or peon in the library.

Table 4.4: Distribution of expected mode of information delivery by type of users

Mode of service delivery	Researcher/ Scientist		Admin/ policy maker		Doctor		Teacher/ Instructor		Student/ Trainee		All	
	C	%	C	%	C	%	C	%	C	%	C	%
By your personal visit	21	84.0	10	58.8	14	60.9	22	78.6	22	81.5	89	74.2
Electronic Document Delivery	13	52.0	-	-	9	39.1	7	25.0	6	22.2	35	29.2
Attachment with email	25	100.0	13	76.5	19	82.6	23	82.1	22	81.5	102	85.0
Over telephone/Fax	4	16.0	6	35.3	6	26.1	2	7.1	5	18.5	23	19.2
By letter/Messenger	-	-	3	17.6	2	8.7	2	7.1	-	-	7	5.8
Access to the library web site	25	100.0	8	47.1	21	91.3	27	96.4	22	81.5	103	85.8
Total	25	100.0	17	100.0	23	100.0	28	100.0	27	100.0	120	100.0

Among the researchers cent percent users want to receive data file as email and Internet. They do not want to receive document through messenger or peon but 52% researcher or scientist group of users have expected EDD services. Among the people involved in administration or policy making, 58.8% respondents wanted to visit library for information seeking; 76.5% users have expected to have information through email attachment, and 47% from library web site. Users among faculty members and student group have keen interest in web based information delivery system (96.4% and 81.5% respectively). In the same way, about 82% teachers and students think that the library should adopt the provision for delivering electronic documents through email attachment. The doctors have also chosen email attachment and library web site (82.1% and 91.3% respectively) as mode of information delivery beside physical visit to the library.

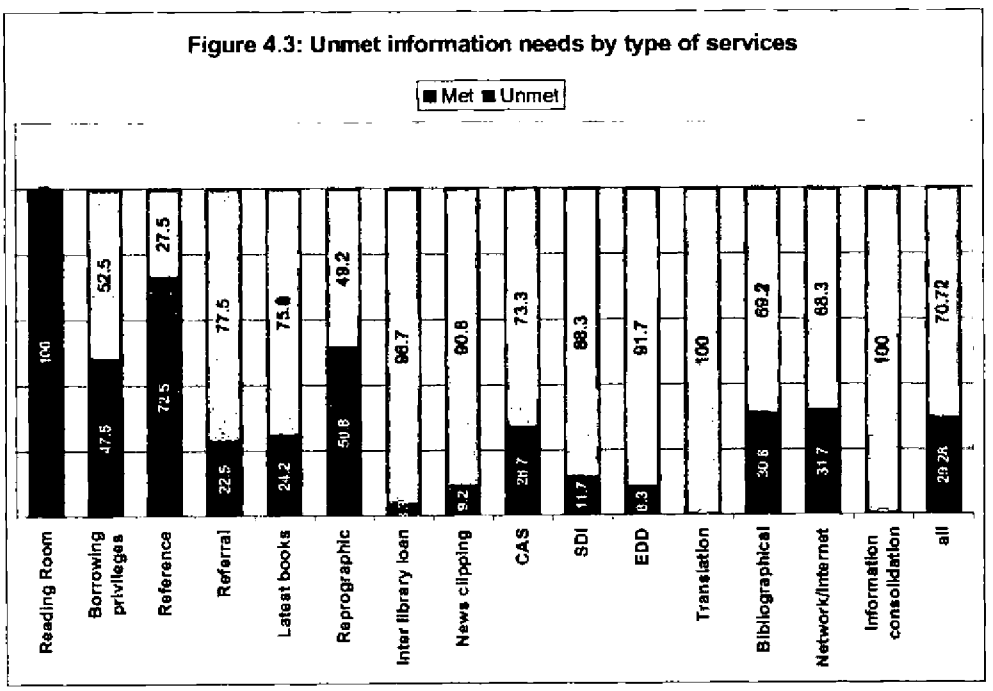
4.1.6 Unmet needs and the alternative ways to meet them

During investigation of the users' needs all the respondents have reported that they have no unmet need in the reading room services. Be it large or

small each library has a study area with necessary seating arrangements in the library. Apart from the reading room facilities, in most cases, there exists a large gap between the services provided and expectation of the user. Here it is to say that the needs that are met are the combination of the library services available in the parent organizations as well as from other sources. The unmet needs have been calculated with the responses that have knowledge on the services as well as those who have not. On the other hand, the group whose information needs are met are the combination of the two: enjoy the services in the library of the parent body and/or have the facility elsewhere.

Both figure 4.3 and table 4.5 indicate that considering all kind of information services, the information resources, infrastructure and work forces of the libraries and information centers in the health and population sector in Bangladesh are able to meet only 29.28% information needs of the users. The rest 70.72% needs remain unmet. The sector-wise or service category distributions of the unmet needs are also not unique.

Figure 4.3: Unmet information needs by type of services



Source: Survey data

About 52.5% users in the study reported that they have been deprived of book borrowing facilities. This is 80.0% in health, 34.0% in population, 60% in nutrition and 47.5% in HPN sector libraries. Though overall deprivation of reference service is 27.5%, the gap is three times higher in the case of referral services. The needs gap in the referral services of nutrition, population and HPN sector is too high (90.0%, 88.0%, 70.0% respectively) as compared to health sector libraries. On average, about 76% sample users do not have any access to the latest information on books and other collected documents. The highest extent of deprivation has been noticed in the population sector (96.0%) and the lowest (30%) in the HPN sector. Most of the sample libraries have photocopy facilities. However, around 50% sample users have been deprived of photocopy and other reproduction services from library of their parent organization.

Table 3.11 in chapter 3 has indicated that 33.3% libraries have inter-library loan and news clipping services. The responses from the users are quite different from the librarians' statement. According to table 4.5 about 97% users do not receive any inter-library loan and 90.8% news clipping services. Libraries in the population and nutrition sector have neither inter- library loan nor news clipping services that is 100.0% unmet need exist in the two sector libraries. While there is 96.7% unmet needs in inter-library loan services in the health sector and 85.0% in HPN sector libraries. About 77% users have no access to news clippings in the health sector and 80% in the HPN sector libraries in Bangladesh. The average unmet needs in the CAS and SDI are 73.3% and 88.3% which are 100.0% in population and nutrition sector.

Only 20.0% information needs in electronic document delivery services are met in the health and HPN sector libraries; the rest 80.0% in the two sectors and 100.0% in population and nutrition sector needs remained unmet. The survey data collected from the library authority indicate that about 50.0% users in their libraries have access to Internet and LAN resources whereas the statistics collected from users indicates that the figure is around 75%. According to the study data about 75% users used to visit the library but do

not use Internet or have no access to Internet resources. Around 37% information need for Internet and networked knowledge in the health sector, 86.0% in the population, 100.0% nutrition and 40.0% in HPN sector have remained unmet. Be it traditional or automated, bibliographical services are one of the most useful services. About 68% information needs for bibliographical data have been remained unmet. Unmet need for translation services was 100.0% in all sector libraries in Bangladesh.

Table 4.5: Percentage distribution of met and unmet needs of users in different categories of services by type of institutions

Library services	Health		Population		Nutrition		HPN		All Sector	
	Met	Unmet	Met	Unmet	Met	Unmet	Met	Unmet	Met	Unmet
Reading room services	100.0	-	100.0	-	100.0	-	100.0	-	100.0	-
Circulation/Loan/Borrowing privileges	20.0	80.0	66.0	34.0	40.0	60.0	50.0	50.0	47.5	52.5
Reference/information services	76.7	23.3	72.0	28.0	65.0	35.0	75.0	25.0	72.5	27.5
Referral services	43.3	56.7	12.0	88.0	10.0	90.0	30.0	70.0	22.5	77.5
Latest addition list books	40.0	60.0	4.0	96.0	5.0	95.0	70.0	30.0	24.2	75.8
Reprographic/reproduction service	63.3	36.7	44.0	56.0	25.0	75.0	75.0	25.0	50.8	49.2
Inter library loan service	3.3	96.7		100.0	-	100.0	15.0	85.0	3.3	96.7
Newspaper clipping service	23.3	76.7		100.0	-	100.0	20.0	80.0	9.2	90.8
Current Awareness Service	53.3	46.7	4.0	96.0	5.0	95.0	65.0	35.0	26.7	73.3
SDI service	3.3	96.7		100.0	-	100.0	65.0	35.0	11.7	88.3
Electronic/Digital document delivery	20.0	80.0		100.0	-	100.0	20.0	80.0	8.3	91.7
Translation services		100.0		100.0		100.0		100.0		100.0
Bibliographical service	63.3	36.7	18.0	82.0	5.0	95.0	40.0	60.0	30.8	69.2
Network/Internet services	63.3	36.7	14.0	86.0	-	100.0	60.0	40.0	31.7	68.3
Information consolidation and repackaging		100.0		100.0	-	100.0	-	100.0	-	100.0

4.1.6.1 Alternative ways to meet the unmet information needs

To satisfy the unmet information needs the users have adopted a number of alternative strategies. In the earlier section we have mentioned that neither institution library nor the nearby libraries can meet the complete information needs of the users. Both the libraries can satisfy only 29.28% information needs of the clients. Table 4.6 is shows the alternative strategies adopted by different categories of users. The sector-wise distribution has been presented in appendix 1, table 18. As shown in table 4.6 about 68% users go to others libraries in which 17.5% are researcher; 7.5% are administrator or policy

maker; 10% doctors, 20% teachers and 13.3% are students or trainees. About 56% users request the librarians to the desired documents for them in which users at the administrative level and faculty member are higher in percentage (13.3 and 14.2% respectively). About 21% users trying to seek substitute information when the used to fail to collect desired document and 10% users of this category leave further searching or seek in another alternative ways.

Table 4.6: Distribution of alternative ways to meet unmet needs by type of user

Alternative ways	Researcher/ Scientist		Admin/ policy maker		Doctor		Teacher/ Instructor		Student/ Trainee		All	
	C	%	C	%	C	%	C	%	C	%	C	%
Go to another library	21	17.5	9	7.5	12	10.0	24	20.0	16	13.3	82	68.3
Request the librarian for procurement of document	15	12.5	16	13.3	7	5.8	17	14.2	12	10.0	67	55.8
Search for substitute information/sources	9	7.5	1	.8	6	5.0	5	4.2	4	3.3	25	20.8
Take assistance from colleague/friends/association etc	18	15.0	11	9.2	18	15.0	17	14.2	20	16.7	84	70.0
Searching Internet/web resources	23	19.2	10	8.3	19	15.8	21	17.5	23	19.2	96	80.0
Leave searching	1	.8			5	4.2	4	3.3	3	2.5	13	10.8
By personal purchase	15	12.5	6	5.0	15	12.5	18	15.0	21	17.5	75	62.5
TV/Radio program	1	.8			4	3.3	1	.8	2	1.7	8	6.7
Total	25	20.8	17	14.2	23	19.2	28	23.3	27	22.5	120	100.0

It has been reported earlier that about 50% sample libraries have Internet connection and/or networked data resources and among the users who have visited these libraries, 25.3% users enjoy Internet and network resources. The rest 75% users' whose information needs have been remained unmet have to access Internet at other places. That is as an alternative to library services, 80.0% user have to access Internet resources outside of the library such as local cyber café, dial-up connection, prepaid or postpaid lines etc. One of the major alternative sources of information is the assistance of the friends and colleagues. Around 70% users take help from professionals, colleagues or friends. This trend has higher effect among the researchers (15.0%), Doctors (15.0%), students (16.7%), and teachers (14.2%) but have lower rate among the administrators or policy makers (9.2%) of the organizations.

Another alternative measure toward meeting unmet needs is personal purchase. About 62% users used to buy books from the market place. This trend has a lower effect among the administrators but higher effect among the researchers (12.5%), doctors (12.5%), teachers (15.0%), and students (17.5%). In addition 6.7% users reported that TV/Radio are also treated as substitute sources to meet the daily information needs beside the library.

Information Seeking Behavior and Library Use

4.2.1 Purpose of visit

During investigation of the library situation, the users have been asked to inform the main purposes of their visit to the library. In the data collection instrument the users were to check multiple purposes. The responses are presented in the table 4.6 by category of users and a separate table has been generated to show the distribution by type of institution given at the annex-1. Table 4.7 shows that 41.7% users have visited the library for borrowing books, 68.3% users visited library to browse books using reference tools in the library; 41.7% users came to locate particular resources; 31.7% users used to come to the library to avail the information services and referral services, 29% users read news papers, 14.2% users came to the library for in-house CD-ROM searching, and 18.3% have come to access Internet resources. This table also indicates that still today user information seeking behavior in the library is limited to four basic traditional library services: browsing books of their interest; issuing these books; locating particular information sources; and obtaining reference services. The faculty members tend to give more priority on circulation system and browsing library collection. The researchers tend to be busier with browsing and handling reference tools. The same trend has been noticed among the students and doctors. It is interesting to note that the administrators and policy makers of the institutions go to library basically for reading newspapers, and secondly, for borrowing books of their interest.

Table 4.7: Purpose of visit to the library by type of users

Purpose of visit	Researcher/ Scientist		Admin/ policy maker		Doctor		Teacher/ Instructor		Student/ Trainee		All	
	C	%	C	%	C	%	C	%	C	%	C	%
To borrow books/periodicals	3	2.5	10	8.3	7	5.8	22	18.3	8	6.7	50	41.7
To browse library collection	23	19.2	5	4.2	17	14.2	20	16.7	17	14.2	82	68.3
To locate particular source(s)	14	11.7	2	1.7	10	8.3	15	12.5	9	7.5	50	41.7
To consult reference sources/tools	22	18.3	6	5.0	15	12.5	16	13.3	23	19.2	82	68.3
To avail their information and referral services	7	5.8	2	1.7	12	10.0	9	7.5	8	6.7	38	31.7
To read newspapers	6	5.0	17	14.2	2	1.7	3	2.5	7	5.8	35	29.2
To search CD-ROM literature	2	1.7	-	-	7	5.8	5	4.2	3	2.5	17	14.2
To browse Internet_ search web resources	3	2.5	1	.8	11	9.2	4	3.3	3	2.5	22	18.3
Total	25	20.8	17	14.2	23	19.2	28	23.3	27	22.5	120	100.0

4.2.2 Frequency of library visit

About 50% users of the sample libraries are weekly visitors (47.5%), among them 13.3% are researchers, 4.2% administrators, 7.5% doctors, 11.7% teachers, and 10.8 students (table 4.8). Only 15% users visit the library daily and they are basically students and doctors. About 17% visitors come to the library bimonthly in which 4.2% are researchers, 2.5% administrative staff 3.3% doctors, 5.0% faculty members, and 1.7% students. Around 13% users visit the library as and when they get assignment in which 4.2% are students, 2.5% are administrative staff and 3.3% are doctors.

Table 4.8: Frequency of visit to the library by type of users

Frequency of visit	Researcher/ Scientist		Admin/ policy maker		Doctor		Teacher/ Instructor		Student/ Trainee		All	
	C	%	C	%	C	%	C	%	C	%	C	%
Daily	-	-	4	3.3	6	5.0	1	.8	7	5.8	18	15.0
Weekly	16	13.3	5	4.2	9	7.5	14	11.7	13	10.8	57	47.5
Bimonthly	5	4.2	3	2.5	4	3.3	6	5.0	2	1.7	20	16.7
Monthly	1	.8	-	-	-	-	-	-	-	-	1	.8
As and when get assignment	1	.8	3	2.5	4	3.3	2	1.7	5	4.2	15	12.5
Leisure time	-	-	1	.8	-	-	-	-	-	-	1	.8
Rarely	2	1.7	1	.8	-	-	3	2.5	-	-	6	5.0
Any other frequency	-	-	-	-	-	-	2	1.7	-	-	2	1.7
Total	25	20.8	17	14.2	23	19.2	28	23.3	27	22.5	120	100.0

4.2.3 Spent time for study and library usage

4.2.3.1 Document searching and retrieval

To assess the information seeking time and study period the sample users have been requested to mention the time spent by them for purposive activities of information seeking and use. The responses are summarized in table 4.9. For the document searching, retrieval and if necessary for duplicating purpose 60% users spent less than one hour time in which 15.0% are students, 14.2 researchers, 12.5% faculty members, and 10.0% administrative staff and doctors. About 28% users have reported that they cannot maintain specific time while only 8.3% users can spend one to two hours for the work.

4.2.3.2 Reading in the field of specialization and allied disciplines

Table 4.8 indicates that about 50% users used to spend one to two hours during visit to the library for study in core discipline of their interest. 10% users have spent less than one hour while another 10% have spent four to five hours of time in the library for study. About 14% users have reported that they cannot maintain fixed time for study, rather it may vary from day to day. Only one researcher (0.8%) has mentioned that he used to study in the library more than 7 hours and 5.0% teachers have reported that they usually do not spend time for study in the library. 40.0% users have spent less than one hour and 20% users have spent one to two hours study time in the library.

4.2.3.3 Searching web resources

About 50% users have reported that they have no scope to access Internet in the library. Among the rest 50%, 19.2% used to spend less than one hour, 20.0% have spent one to two hours for searching resources on the web. A single student has reported that he used to spend three to four hours before the computer for Internet searching.

4.2.3.4 Newspaper and recreational reading and others

About 40% users have mentioned that they do not come to the library for newspaper reading and 91.7% users not for recreational purpose. 39.2%

users have usually spent less than one hour and 16.7% have spent some time for recreational study or newspapers reading. About 80% users think that the library is not a place for gossiping while 13.3% have spent a few times for gossiping in the library. About 52.5% users consult the librarians about the research projects or assignment and have spent less than one hour at the desk of librarians. 15% users have opined that time for purpose was not fixed. About 73.3% users have spent less than one hour time to know about the new arrival. For the same purpose 16.7% users have not maintained any fixed time

Table 4.9: Distribution of time spent for different type of library activities by type of users

Activities and Level of constraint	Researcher/ Scientist		Admin/ policy maker		Doctor		Teacher/ Instructor		Student/ Trainee		All	
	C	%	C	%	C	%	C	%	C	%	C	%
Document searching/retrieval/duplicating												
Less than 1 hour	17	14.2	10	8.3	12	10.0	15	12.5	18	15.0	72	60.0
1-2 hours	2	1.7	-	-	2	1.7	2	1.7	4	3.3	10	8.3
Not certain	6	5.0	6	5.0	7	5.8	10	8.3	4	3.3	33	27.5
Do not go for this purpose	-	-	1	.8	2	1.7	1	.8	1	.8	5	4.2
Total	25	20.8	17	14.2	23	19.2	28	23.3	27	22.5	120	100.0
Reading in the field of specialization												
Less than 1 hour	-	-	5	4.2	2	1.7	4	3.3	1	.8	12	10.0
1-2 hours	14	11.7	2	1.7	9	7.5	2	1.7	3	2.5	30	25.0
3-4 hours	9	7.5	2	1.7	6	5.0	5	4.2	10	8.3	32	26.7
4-5 hours	-	-	-	-	3	2.5	2	1.7	7	5.8	12	10.0
5-6 hours	-	-	-	-	2	1.7	2	1.7	6	5.0	10	8.3
7-10 hours	1	.8	-	-	-	-	-	-	-	-	1	.8
Not certain	1	.8	8	6.7	1	.8	7	5.8	-	-	17	14.2
Do not go for this purpose	-	-	-	-	-	-	6	5.0	-	-	6	5.0
Total	25	20.8	17	14.2	23	19.2	28	23.3	27	22.5	120	100.0
Reading in the areas other than specialization												
Less than 1 hour	15	12.5	7	5.8	10	8.3	6	5.0	10	8.3	48	40.0
1-2 hours	5	4.2	-	-	5	4.2	5	4.2	9	7.5	24	20.0
3-4 hours	1	.8	-	-	1	.8	1	.8	1	.8	4	3.3
5-6 hours	-	-	1	.8	-	-	-	-	-	-	1	.8
Not certain	4	3.3	9	7.5	6	5.0	10	8.3	5	4.2	34	28.3
Do not go for this purpose	-	-	-	-	1	.8	6	5.0	2	1.7	9	7.5
Total	25	20.8	17	14.2	23	19.2	28	23.3	27	22.5	120	100.0
Searching web resources/ Internet browsing												
Less than 1 hour	5	4.2	5	4.2	6	5.0	6	5.0	1	.8	23	19.2

Activities and Level of constraint	Researcher/ Scientist		Admin/ policy maker		Doctor		Teacher/ Instructor		Student/ Trainee		All	
	C	%	C	%	C	%	C	%	C	%	C	%
1-2 hours	6	5.0	1	.8	8	6.7	2	1.7	1	.8	18	15.0
3-4 hours	-	-	-	-	-	-	-	-	1	.8	1	.8
Not certain	2	1.7	2	1.7	2	1.7	-	-	3	2.5	9	7.5
Do not go for this purpose	1	.8	2	1.7	1	.8	2	1.7	3	2.5	9	7.5
service not available	11	9.2	7	5.8	6	5.0	18	15.0	18	15.0	60	50.0
Total	25	20.8	17	14.2	23	19.2	28	23.3	27	22.5	120	100.0
News paper reading												
Less than 1 hour	8	6.7	11	9.2	11	9.2	5	4.2	12	10.0	47	39.2
1-2 hours	-	-	-	-	-	-	1	.8	-	-	1	.8
More than 10 hours	-	-	-	-	-	-	1	.8	-	-	1	.8
Not certain	5	4.2	3	2.5	2	1.7	6	5.0	4	3.3	20	16.7
Do not go for this purpose	12	10.0	3	2.5	8	6.7	15	12.5	10	8.3	48	40.0
service not available	-	-	-	-	2	1.7	-	-	1	.8	3	2.5
Total	25	20.8	17	14.2	23	19.2	28	23.3	27	22.5	120	100.0
Recreational reading / spent leisure time												
Less than 1 hour	3	2.5	1	.8	3	2.5	-	-	1	.8	8	6.7
Not certain	-	-	-	-	-	-	1	.8	1	.8	2	1.7
Do not go for this purpose	22	18.3	16	13.3	20	16.7	27	22.5	25	20.8	110	91.7
Total	25	20.8	17	14.2	23	19.2	28	23.3	27	22.5	120	100.0
Gossiping with colleagues												
Less than 1 hour	1	.8	5	4.2	3	2.5	2	1.7	5	4.2	16	13.3
1-2 hours	-	-	-	-	-	-	-	-	2	1.7	2	1.7
Not certain	-	-	2	1.7	2	1.7	-	-	3	2.5	7	5.8
Do not go for this purpose	24	20.0	10	8.3	18	15.0	26	21.7	17	14.2	95	79.2
Total	25	20.8	17	14.2	23	19.2	28	23.3	27	22.5	120	100.0
To consult the librarian/reference desk on research project/ assignment												
Less than 1 hour	9	7.5	12	10.0	13	10.8	16	13.3	13	10.8	63	52.5
1-2 hours	2	1.7	-	-	3	2.5	4	3.3	6	5.0	15	12.5
Not certain	7	5.8	3	2.5	3	2.5	4	3.3	2	1.7	19	15.8
Do not go for this purpose	4	3.3	-	-	4	3.3	2	1.7	3	2.5	13	10.8
service not available	3	2.5	2	1.7	-	-	2	1.7	3	2.5	10	8.3
Total	25	20.8	17	14.2	23	19.2	28	23.3	27	22.5	120	100.0
To know new arrivals												
Less than 1 hour	13	10.8	11	9.2	19	15.8	20	16.7	25	20.8	88	73.3
1-2 hours	-	-	-	-	-	-	3	2.5	-	-	3	2.5
Not certain	8	6.7	5	4.2	2	1.7	4	3.3	1	.8	20	16.7
Do not go for this purpose	4	3.3	1	.8	2	1.7	1	.8	1	.8	9	7.5
Total	25	20.8	17	14.2	23	19.2	28	23.3	27	22.5	120	100.0

4.2.3.5 Circulation, reference and referral services

Most of the users have given top priority on the borrowing privileges. According to annex table 22a, 94.2% users in which 22.5% in health, 41.7 in population,16.7% in nutrition and 13.3% in HPN sector have strongly demanded for circulation services. Surprisingly, about 50% users have been completely deprived of the services and another 12.5% ranked the service as inadequate. 19.2% users think that this service is fairly adequate and 17.5% think the existing borrowing facilities are quite satisfactory for them.

Around 80% users have opined that reference services play important role in information seeking behavior. About 40.8% users have given top and 39.2% users have given middle priority on reference and referral services (Annex table 22b). 15.0% users have given low priority and 5.0% users have never used reference services or not informed about such sort of services. Though most of the sample libraries have remarked that 12.5% users have never received reference services; 38.3% users have felt that the existing facilities are not adequate while 45.0% have reported that the services are fairly adequate.

About 28% users of different categories are not aware of the referral service. Annex table 22c indicates that only 8.3% users have expressed their satisfaction while 30.8% users have remarked that existing provision of referral service in the sample library is inadequate. This scenario is absent in the population and HPN sector libraries.

4.2.3.6 CAS and SDI services

According to annex table 22d around 37% users have given top priority and 52.5% medium priority on the provision of current information. Only 3.3 % users thought that the existing provision has been adequate for them; 35.8% things that it has been fairly adequate and 49.2% user have termed it as inadequate. In case of SDI services it is interesting to note that 39.2% users are unaware of the service and 20% users have never used such type of services. SDI service has been considered as top priority to 20% users and

mid-priority to 14.2% users. Realistically, there are only 16.6 % users who have been served with SDI services.

4.2.3.7 Inter-library loan and bibliographic services

10.0% users think that inter-library loan should be of top priority services while another 18.3 has termed it as mid-priority services. 35.8% users are informed about the services but they have never received such type of services. The knowledge gap on the services is 20.8%. Only 4.2% users have acknowledged the existence of inter-library loan services in their library. 43.3% users have given mid priority, 19.2% top priority and 29.2 low priority on bibliographical services. In response to the service satisfaction, 60% users have termed the provided services as inadequate and only 15% have perceived that it is fairly adequate.

4.2.3.8 Online and reprographic services

Online services are the aspiration to most of all the users. Networked and Internet resources, online access to library website and its resources, online access to digital information resources and easy downloading are the earnest desire of 73% users. Such sorts of services are of second priority to 23.3% users (Annex table 22k). About 51% respondents have reported that such kind of services is not available in their libraries. On the other hand, 14.2% users have ranked it as adequate, 10.8% as fairly adequate, and 23.3% as inadequate.

About 83% users have desired to have adequate photocopy and other reprographic services while to another 15.8% these services are of second priority. To inform the availability, 35% have opined that the existing photocopying facilities are quite adequate and 32.5 have termed it as fairly adequate. Another 30% users have reported that either the service has been inadequate or unavailable.

Table 4.10: Distribution of priority and availability of expected services by type of libraries: News Clippings

Priority	Health		Population		Nutrition		HPN		All	
	C	%	C	%	C	%	C	%	C	%
Service priority										
Top priority	2	1.7	15	12.5	5	4.2			22	18.3
Middle priority	11	9.2	21	17.5	8	6.7	1	.8	41	34.2
Low priority	10	8.3	7	5.8	5	4.2	4	3.3	26	21.7
Not using at all	7	5.8	4	3.3			15	12.5	26	21.7
Unknown/Not informed			3	2.5	2	1.7			5	4.2
Total	30	25.0	50	41.7	20	16.7	20	16.7	120	100.0
Availability										
Adequate	1	.8							1	.8
Fairly adequate	4	3.3	10	8.3	4	3.3	1	.8	19	15.8
Inadequate	9	7.5	5	4.2	1	.8	3	2.5	18	15.0
Not available	9	7.5	32	26.7	15	12.5	1	.8	57	47.5
Don't know	7	5.8	3	2.5			15	12.5	25	20.8
Total	30	25.0	50	41.7	20	16.7	20	16.7	120	100.0

4.2.3.9 News clipping and translation services

The desire for news clippings and translation services is not so strong among the user groups as well as availability of these two items are seldom noticed in the libraries in Bangladesh. According to table 4.10 and 4.11 only 4.2% users have been unaware of the news clipping services and only 18% have strong aspiration for news clippings and 0.8% in translation services.

Table 4.11 Distribution of priority and availability of expected services by type of libraries: Translation service

Priority	Health		Population		Nutrition		HPN		All	
	C	%	C	%	C	%	C	%	C	%
Service priority										
Top priority			1	.8					1	.8
Middle priority	2	1.7	2	1.7	3	2.5			7	5.8
Low priority	4	3.3	5	4.2	5	4.2			14	11.7
Not using at all	17	14.2	10	8.3	8	6.7	20	16.7	55	45.8
Unknown/Not informed	7	5.8	32	26.7	4	3.3			43	35.8
Total	30	25.0	50	41.7	20	16.7	20	16.7	120	100.0
Availability										
Not available	10	8.3	23	19.2	10	8.3	4	3.3	47	39.2
Don't know	20	16.7	27	22.5	10	8.3	16	13.3	73	60.8
Total	30	25.0	50	41.7	20	16.7	20	16.7	120	100.0

4.2.4 Document searching and locating strategy in the library

With the changes of information technologies information searching strategies are also changing. However, information location strategies in the health and population sector libraries are still traditional. According to table 4.12 about 84% users used to approach the librarian for locating desired documents and 83.3% users use library catalog to find the location of specific documents. Only 5% users have opportunity to consult indexing and abstracting services in which 1.7% are researchers and 2.5% are faculty members and students. 17.5% users are habituated to browse content page of books and journals to pick the information of their requirement. 31.7% users frequently consult the end note and references to explore and locate the desired documents, 14.2% users used to discuss with the colleagues/friends to explore the information sources and lead the project into success. Though 50% libraries have networked computers, only 19.2% users have facilities for access to web resources.

Table 4.12: Distribution of strategy for searching information in the library by type of users

Searching strategy	Researcher/ Scientist		Admin/ policy maker		Doctor		Teacher/ Instructor		Student/ Trainee		All	
	C	%	C	%	C	%	C	%	C	%	C	%
By browsing the content page of the periodicals in the Library	4	3.3	1	.8	5	4.2	6	5.0	5	4.2	21	17.5
Through available index, abstract or reviewed periodicals	2	1.7	-	-	-	-	3	2.5	1	.8	6	5.0
through documentation list	-	-	2	1.7	-	-	2	1.7	-	-	4	3.3
By searching Library Catalogue	22	18.3	8	6.7	22	18.3	24	20.0	24	20.0	100	83.3
By using the references/bibliographies given at the end of e	8	6.7	2	1.7	8	6.7	10	8.3	10	8.3	38	31.7
By discussing with own professional colleagues	6	5.0	-	-	3	2.5	7	5.8	1	.8	17	14.2
By approaching to Librarian	22	18.3	17	14.2	19	15.8	20	16.7	23	19.2	101	84.2
By consulting bibliographies prepared separately	-	-	-	-	1	.8	-	-	-	-	1	.8
Through library web site	3	2.5	1	.8	11	9.2	5	4.2	3	2.5	23	19.2
Any other strategy	2	1.7	-	-	-	-	2	1.7	-	-	4	3.3
Total	25	20.8	17	14.2	23	19.2	28	23.3	27	22.5	120	100.0

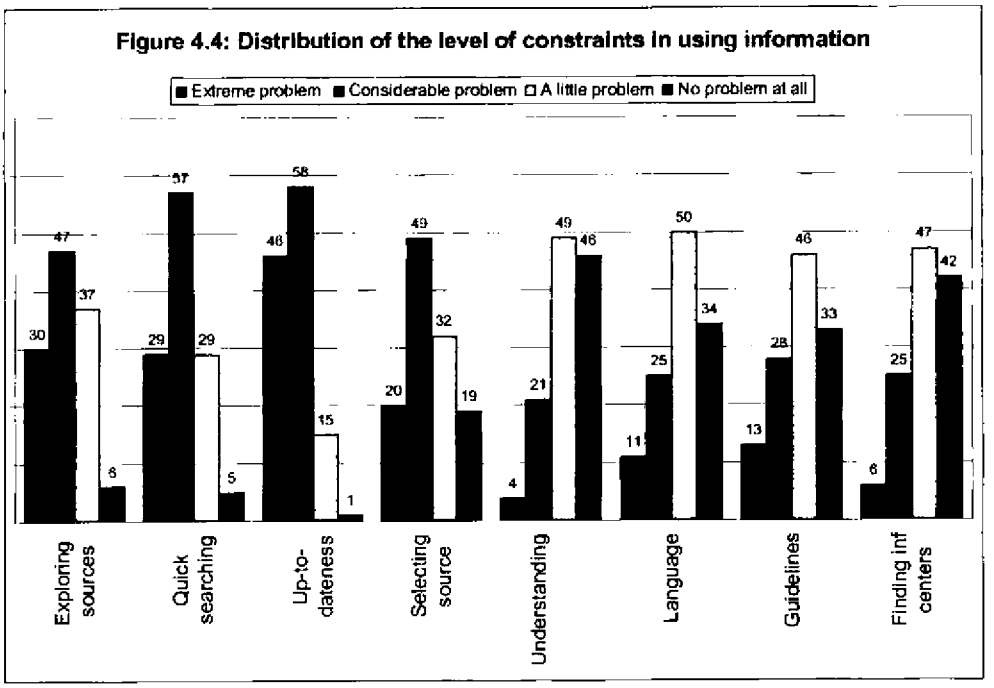
4.2.5 Level of expectations and availability of services

The library service priority was set as five main categories: 'top priority', 'medium priority', 'low priority', 'not using at all', and a knowledge level category- 'unknown/not informed'. In the same way the rank of availability was also categorized into five groups: 'adequate', 'fairly adequate', 'inadequate', 'not available at all' and a knowledge level category- 'do not know'. The users have been asked about their interest in priority order and requested to rank the availability of that services in library of his/her parent organization. The responses of 120 sample users have been presented in annex tables 22a to 22.l.

4.2.6 Constraints in using information

To know the trend of information seeking behavior the users were asked on the level of constraint they face in the information seeking process. The constraints were categorized into four groups: extreme problem, considerable problem, a little problem and no problem at all. Figure 4.4 is the summary representation of the level of constraints in all categories of users and type of libraries. The detail presentation of the statistics has been given in the annex tables 19a to 19i.

To inform the level of constraints in tracing and finding suitable information sources only 5.0% informed that they have not encounter any problems. The rest 95% users have been facing problems at different levels (25% are experienced extreme problem, 39.2 considerable problem, and 30.8% a little problem). The percentage distribution varies in different categories of users. Toward solution, 52.6% users tend to seek assistant from librarians, 28.9% used to search bibliographical sources and 26.3% consult subject experts friends and colleagues, and 24.6% go to another library for tracing out desired documents.



Source: Survey data

Around 95% users are facing different types of problems in getting information quickly. According to annex table 19.b about 24% users who are basically researcher, faculty members and students are facing serious problems. 47.5% users have to face considerable problems and only 4.2% users have reported that they do not face any problem in getting information quickly. To overcome the situation 54.8% users try to access Internet resources and take assistance from librarians, 22.6% go to another library and 38.3% consult colleagues and friends. About 48% users encounter moderate problem and 38.3% extreme problem in getting up-to-date materials. Among the 120 sample users only one respondent (0.8%) has reported that he is facing no problem at all. To resolve the problems 48.7% users can access to Internet resources, 44.5% seek assistance from librarians and 37.0% respondent have received help from professional colleagues and friends.

According to annex table 19d about 85% users have to face different levels of problems in selecting and locating suitable information sources in which 16.7% users are in acute problem 40.8% users are in considerable problems,

and 26.7% users feel a little problem. Among the alternative initiatives for locating suitable information sources, 42.6% users have searched bibliographical instruments, 37.6% have accessed to Internet resources, 48.5% have requested librarians for desired sources, and 17.8% have consulted subject experts.

In information seeking behavior proper guidance in exploration, access and use of information is of paramount importance for the new users. About 25% users think that they have no problem regarding information access and use. While 10.8% users have serious problem due to inadequacy of guidance, 23.3% have considerable problems and 38.3% user have a little problem. To have proper guidance about 53% users have sought assistance from librarians, 54% users have taken help from colleagues and 13.8% users have consulted Internet literature. Around 65% users have no problem to have accessibility to other libraries and in this regard about 95% users take assistance from librarians and 19% from friends and colleagues. One of the positive aspects is that around 5% users have been in serious problem due to their ignorance about what type of services available and where. About 21% of the users have to face a considerable problem and 39.2% a little problem associated with their ignorance. To overcome the situation 70.5% users have consulted librarians and 69.2% have consulted friends and colleagues to know what type of services are available and where.

4.3 Summary of the findings

1. The information resources in the sample libraries range from a few hundred to a few thousand. About 59% libraries can collect only 50 to 250 publications annually. Around 50% libraries and information centers have no orientation with e-book, e-journal and other electronic information sources. However, 100% library professionals think that they should collect digital collection.

2. No sample library used to conduct user survey to know their information needs and 50% libraries consider the written, telephone or verbal request from the users for collecting specific publication(s). Around 30% book selection was conducted by selection committee or library committee. About 37% libraries collect books as directed by the administration of the parent body/donor agency. This is really disappointing.

3. About 66.7% libraries purchase books and periodicals form vendors and no library purchase books from publisher directly. About 17% libraries each purchase directly from market by the librarians and by the administration directly without consulting the librarians or the library committee.

4. Around 50% sample libraries use bibliographic database and 25% libraries maintain database and card catalog both. One-third libraries use only card catalog while 8.3% libraries do not practice any standard cataloging procedure and were found totally unorganized order. About 75 to 80% librarians opined that they cannot take proper initiatives for indexing and abstracting services due to lack of expert manpower and insufficient fund.

5. Cent percent sample users are enjoying reading room services and 75% have reference service facilities. About 50% users are in extreme problem and 42% in considerable problem in finding up-to-date information sources. Two-third libraries reported to have circulation facilities whereas only 40% users reported that they can borrow books from the library.

6. One-fourth 25% sample libraries are members of two separate networks-POPIN and HELLIS. These libraries have reported that they have inter-library loan services. Reported absence of service statistics indicates that the services could not be materialized yet or the services had been stopped recently, or the network was a theoretical, invisible and inactive one.

7. Display board (87.5%) and content list of new arrivals (62.5%) are the two main mechanisms for providing CAS. Only one sample library (12.5%) provides CAS and EDD services through library website.

8. About 58% libraries are suffering from lack of skilled manpower and 42% libraries reported that they have sufficient number of staff. The professional and non-professional work force ratio is 1:2. One-third libraries are administrated by non-professional staff. 60% libraries have no provision for staff evaluation. Only one-third librarians have the opportunity to participate in training, workshop and other professional development activities.

9. About 50.0% users in their libraries have access to Internet and LAN resources whereas the statistics collected from users indicates that the figure is around 70%.

10. In practice around 3 out of 12 sample (25%) librarians can take part in administrative works.

11. There is no automated library or information center in the country in true sense of the term. Fifty percent libraries and information centers have reported that they do not have any ICT facilities. Among the rest 60% maintain bibliographic database, 80% libraries use computer administration and management.

12. About 80% users go to the parent library and nearby libraries for study and research information. Beside library 71% users depend on personal collection and 69% on the Internet. Besides study and research information 55.0% users tend to use Internet for general information, 62% for supporting information and 65% for recreational information. For recreational information the major institutional supports of the users are media- Radio, TV and Newspapers (96%); 52% users depend on personal collection.

13. Around 85% users of all categories want to download information form their respective libraries through email attachment and library web site while 74% users think that they should pay physical visit to the library for information acquisition. This data hints a positive attitude of the users' toward ICT. Among the researchers cent percent users want to receive data file through email.

14. Existing information resources in the health and population sector have been able to meet 29% information needs of the users and the rest 71% needs remain unmet. To satisfy the unmet needs several alternative strategies have been adopted by different categories of users. About 68% users go to others libraries, 56% users request the librarians for the desired documents, 21% users try to seek substitute information, 80% users have to access Internet resources outside the library, 70% users seek help from professionals, colleagues or friends, and 10% users leave further searching or seek in other alternative ways.

15. About 95% users have been facing problems at different levels in finding suitable information sources. 85% users have to face different levels of problems in selecting and locating suitable information sources. Among the 120 sample users only one respondent (0.8%) has reported that he is facing no problem in searching, locating and using information.

Chapter 5

National Health and Population Information Center

A Model Plan

Chapter outline

National Health and Population Information Center

A Model Plan

5.1 Introduction

Considering the colossal gap between information needs and the existing services of the libraries and information centers, it is urgent to build an integrated information system for programmatic and research support in the health and population sector programs in Bangladesh. Several authoritative bodies had taken several unsuccessful attempts in the past to establish networked information resources for the health sector libraries and information centers in the country. Their contributions and experiences have paved the way for outlining the strategy for need and context based design and implementation of the information system. The system may be denoted as "The National Health and Population Information Center (NHPIC)" that will ideally be a comprehensive knowledge-based system capable of providing information and references to all in the concerned sectors. As a whole, the NHPIC will be known as the common space where health and population information sources are traced, organized, indexed, preserved, accessed and evaluated. It should have a decentralized networked management of health and population knowledge sources and flows that will influence the country-wide information seeking behavior in the said sector. This model will outline a vision, test the feasibility and design considering no major changes in the administrative and policy factors. It will also look into the process of mobilizing the existing resources, institutional capacity building and technological factors needed to design a national health and population information center.

5.2 Vision/Objectives

The prime objective of the proposed information system will be to provide access to information and scientific, technical and factual knowledge on health, population and related disciplines. The NHPIC will include the values, practices, relationships, laws, standards, systems, applications, and technologies that support all facets for free flow of information in the health

and population sector in Bangladesh. It will encompass all the tools necessary such as clinical practice guidelines, educational resources for the public and professionals, geographic information systems permitting regional analysis and comparisons, health statistics at all levels of government, and many forms of communication among users. It should have a web based central database covering bibliographical data as well as electronic books and journals; directories of medical specialists, hospital and clinics; telemedicine and teleconferencing facilities; health and population MIS related forms, reports and other internal publications, etc. There should be dual mode of accessibility to the information resources: personal visit as well as log into the web site. More specifically the NHPIC will aimed at:

i. Establishing a mechanism for effective bibliographic control on the published and unpublished national literature as well as link to external resources (preferably web resources) on health, population, nutrition and allied subjects;

ii. Developing a sound collection for comprehensive study and research for the said disciplines;

iii. Developing a central databank with union list of bibliographic data as well as digital text, directory of hospitals, clinics and physicians; statistical data and reports of MIS, electronic books and journals; telemedicine, etc.

iv. Working as national reference center for all sort of information queries for national and international literature though it is not possible to bring all national resources under a single network;

v. Sharing ICT, human resources as well as knowledge and skills among the participating libraries and information centers;

vi. Ensuring users online access to query processing and retrieval from digital resources in a web server-browser environment; and

vii. Building capacity for the health and population related institutions in the country to produce, organize, index, publish, communicate, and use scientific, technical and factual information in decision-making processes as well as in research and development.

5.3 Services to be provided

Diversified interest of different users groups, enormous literature on different media, separate stream-line of management, multiple level of program operations etc. have extended aspiration for information from the system a lot. Nation wide operating environment will make the NHPIC complex but prospective. However, most information workers think that information system of an organization serves four levels of users: Knowledge level, Strategic level, Management level, and Operational level. Thus, the scope of the services of the system may be expressed in terms of the following levels:

5.3.1 Knowledge level information services

Knowledge level information systems serve the interested groups responsible for idea conceptualization and generation, learning, and creating new information and update the knowledge base. The target groups of such type of information systems are the members of a profession such as doctors, FP workers, scientists, researchers, etc. Such information system helps in creating innovative knowledge and promotion of the knowledge into work. Libraries and information centers attached to different organizations belong to this category. Now a days, knowledge based system/library system incorporates itself with office automation systems. It handles and manages documents using desktop publishing, document imaging, optical storage and retrieval systems and communication with email, voice mail, videoconferencing, electronic document delivery (EDD), etc. Being one of the high end technology based information centers, the NHPIC will have the aspiration to build a complete knowledge base on different aspects of health and population and provide comprehensive services to its concerned users. Researchers and fellows, students and teachers, trainees and trainers,

providers and patrons will expect the following categories of services from the knowledge base:

5.3.1.1 Reading room sub-system

The NHPIC should design a suitable reading room with comprehensive collection on health and population disciplines both in printed and digital formats. Preferably the reading room should have three subsections: reading space for general reading, reference reading and periodical section reading room. Access to the stack area should be open with necessary security equipment. The reading room should be equipped with necessary computer terminals connected to the central server and Internet so that user can search and retrieve in-house bibliographical and text data. The users should have printing, duplicating and output transmission facilities through efficient and controlled procedures.

5.3.1.2 Reference, information and referral module

One of the most crucial objectives of the NHPIC will be to provide a wide range of reference and information services across the country, ranging between the capital city and rural upazila level information system. The center will work as the largest referral center for health and population information across the country. In addition to traditional reference services, the center may aim at providing the following information services for the concerned clients.

- Public health and sanitation alerts from the central authority to the long way of Union Health and Family Welfare Center (UHFWC) as well as from upazila level emergency to the central administration via NHPIC.
- Full fledged web based data support for renowned hospitals, clinics, physicians and medical specialist across the country through web site.
- Location of specific bibliographic items to the participating libraries and information centers through union catalog.

5.3.1.3 Circulation sub-system

The NHPIC will not be responsible for providing borrowing facilities in true sense of the term. However, a limited scale of loan facilities may be introduced in the proposed system for specific project, research work etc. but not for all the people. The system will have a long range plan to convert paper media to digital collection and providing country wide diffusion of the digital publication even to the Union Health and Family Welfare Center if the infrastructure permits in future.

5.3.1.4 Inter-library loan sub-system

Any library or information center in the health and population sector can participate in the national information systems having a common agreement. According to the agreement, the participating nodes will enjoy inter-library lending facilities within the network (the procedures and rules have been discussed in "network design" section in detail).

5.3.1.5 Bibliographical services

The central NHPIC will be responsible for producing complete bibliography of books, journals, journal articles as well as full text database for all digital documents, e-books and e-journal articles. In addition to this in-house database, the web server will produce webliography- the art of listing web resources over the Internet- so that the center can establish a positive control over international literature besides national literature on health and population. If the center can successfully do the work it is believed that the NHPIC will work as a guide to literature searching for the research community.

5.3.1.6 Indexing and abstracting module

The proposed information system will also take proper initiative for periodical indexing and indexing to newspaper articles. According to the network agreement all participating libraries and institutions will be responsible for sending abstracts of the articles/books of their internal publication/journals as

well as the subscribed issues to the central databank. The system will also maintain close relationship with the international publishers for catalog in publication and indexing abstracting periodicals.

5.3.1.7 CAS and SDI module

Current awareness services are concerned with dissemination of information that will keep its users well-informed and up-to-date in their fields of basic interest as well as in the related subjects. One of the key objectives of the NHPIC would be to keep the user informed on the recent development of the national health and population program in Bangladesh as well as recent development of the disciplines. The proposed system will take following actions for CAS.

i. Preparing and sending monthly accession list of publications, articles, etc. to the nodes, subject experts, and researchers.
ii. Weekly update of the web site and inclusion of the new arrivals to the updates.
iii. Library display in front of the reading room and reference section with jacket of the recent publications, articles, photocopy of the list of contents, periodic accession list, etc.
iv. Publish quarterly NHPIC bulletin with special focus on the recent events, running and future programs and planning as well as new publication, etc.
v. Maintain complete user profile and will try to match the interest of the selective user with the subject matter of new arrival. And if matched, respective users will be notified about the document. In case of digital collection the document will be directly sent to the user.

5.3.1.8 News clipping module

The NHPIC should have extensive program for news clippings of reputed national and international daily newspapers and periodicals relating to national health and population programs, events, success and failure,

innovations, etc. The information system will maintain the clippings on digital format and maintain the database for the metadata. The news clippings will be accessible online from any browser.

5.3.1.9 Online searching and retrieval module

One of the most important visions of the NHPIC will be to bring changes in the quality of information services in Bangladesh in the respective disciplines. The system will be designed in such a way which will permit provisioning of "door-step information services". Concerned user will log into the system web server, search and download the desired information at the desk of his/her office or residence across the country and even from abroad. The system is expected to offer:

i. Holding text database of all soft copies of the government publications, research reports, seminar and conference proceedings, and provide accessibility and use. It will also publish these resources on the system homepage for downloading by the concerned remote users.
ii. During collection development the system will give priority on collecting e-books and e-journals not only by the NHPIC but also the participating members in the network. These books, journal articles and other collections will be made available online for the registered members.
iii. Publishing Online Public Access Catalog (OPAC) of the central bibliographic database/Union catalog at the homepage of NHPIC.
iv. Electronic document delivery (EDD) on demand and in anticipation of demand.

5.3.2 Strategic level information support

This helps the management of an organization to tackle and address strategic issues and long term trends, both internal and external. Usually, Executive/Expert Support System (ESS) works for such type of information

support. These systems filter, compress and track critical data, emphasizing the reduction of time and effort required to obtain information useful to executives.

The NHPIC itself is not an Expert Support System (ESS). However, it is expected that its knowledge base, MIS and supporting components of the NHPIC will be helpful for the policy maker, administration and donors to take decision, planning, implementation and evaluation of effective health and population programs.

5.3.3 Management level information supports

Such type of information systems serves the management level of the organization with reports, and, in some cases, with online access to the organization's current performance and historical records. MIS, will primarily serve the functions of planning, controlling and decision making at the management level. Generally this system is dependent on underlying Transaction Processing System (TPS). MIS serves managers periodically and generally addresses structured questions that are known well in advance. The systems are generally not flexible and have a little analytical capability. Some researchers use the term MIS to include all information activities that support the functional areas of an organization. According to the traditional view, MIS and Decision Support System (DSS) work under the same umbrella.

Now the scope of health and population program has widened further and has included national nutrition program within the framework of HNPSP. Now MIS in HNPSP is functioning as before 1998 under two separate streams independently. Both the streams- MIS of DGHS and MIS unit of DGFP- have their moderate type of set up at the central level. The functions of MIS at the district, upazila and union levels are running in discrete ways at different offices. As a result, duplication, overlapping, narrow coverage (in some cases wide coverage), recording errors, processing anomalies, etc. exist in the present MIS practices. These limitations can be overcomed if the rural level MIS activities can be included as a part of NHPIC.

5.3.3.1. The role of proposed NHPIC in MIS programs

Under the system the MIS data will be collected from the households at village and ward levels of the union at the small unit of the UnHPIC. The unit manager should be a professional data administrator who will be responsible for:

i. Distribution of MIS forms and training for the data collector at union level including UHFWC, community clinics, and satellite clinics
ii. Direction and coordination of the data collection program by FWA, Health worker, NGO worker and so on
iii. Data cross checking, verification and recording
iv. First level compiler of data sheets and forms to prepare input for the upazila level MIS at UpHPIC
v. Circulate/distribute health and population related message for the general people, administrative order for the workers as well as receiving and sending feedback of the end user of information.

In the same ways the MIS officer at the UpHPIC will be responsible for:

i. Compilation of data received from union level and sending it to MIS at D-HPIC
ii. Recording and compilation of data to be captured at Upazila Health Complex (UHC) and other areas
iii. Liaison between Un-HPIC and D-HPIC.

The D-HPIC will be responsible for:

i. Compilation of upazila datasheet and send it to National MIS Unit
ii. Recording and compilation of data from District hospital and others
iii. Liaison between National MIS and Up-HPIC.

5.3.4 Operational level information supports

It supports operational managers by keeping track of the elementary activities and transactions of the organization. The main purpose of system at this level is to answer routine questions and to track the flow of transactions in the

organizations. The proposed NHPIC will provide a strong operational information support for the national health and population program in Bangladesh. The web server of NHPIC will publish all operation manuals for the concerned workers, MIS forms and procedures will also be available there. Any authentic user will have online access to these resources from any where in the country. If the necessary communication infrastructure is available all the resources can be accessed from rural UnHPIC at UHFWC.

5.4 Target user groups

The NHPIC infrastructure will fundamentally be about bringing timely health and population information to and aiding communication among the policy and decision makers, program administrators and implementers as well as their communities. Individuals, healthcare providers, and public health professionals are key NHPIC stakeholders and users. More specifically, the system will be made up of mechanisms and procedures for acquiring and analyzing data and for providing information needed by:

i. All levels of health planners and managers for the planning, programming, budgeting, monitoring, assessment and coordination of health and population programs and services
ii. Health care personnel, research workers and educators in support of their respective activities
iii. Socioeconomic planners and the general public outside the health and population sector for inter-sectoral information linkage, and
iv. The national policy-makers for evidence-based policy formulation.

5.5 System architecture

5.5.1 Administrative structure

Considering the existing administrative structure of the MOHFW health and population program, four layers of administrative structure as a hierarchical pyramid may be suggested for the proposed information system- NHPIC: The layers will be:

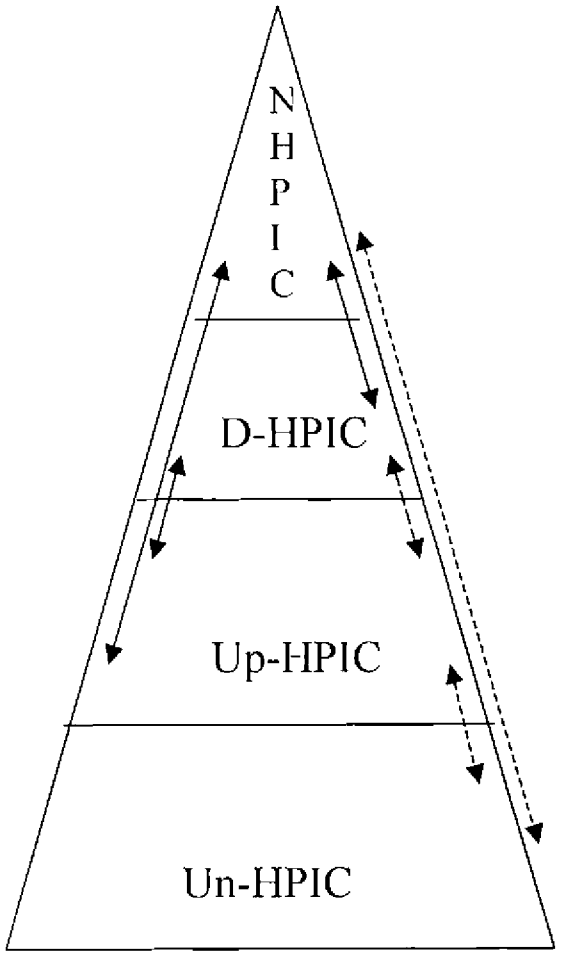


Figure 5.1: Hierarchical structure of NHPIC

The N-HPIC at the national level

a) The D-HPIC at the district level.
b) The Up-HPIC at the rural upazila level and
c) The Un-HPIC under the coordination of FWV at the UHFWC at the union level.

5.5.1.1 The NHPIC

The NHPIC will work at the central level under the direct coordination of the Ministry of Health and Family Welfare (MOHFW). The administration of health and family planning programs are of two separate streams: DGHS and DGFP. On the other hand, hospitals, public health, gender issues, libraries are administrated by separate Deputy Secretary (DS) of MOHFW. So for better coordination and control, the information center should be administrated by an additional secretary or by the joint secretary of coordination. The NHPIC will be the apex body and concerned directorates, departments and others organizations will participate both as contributing and beneficiary nodes. Some possible nodes are: DGHS with MIS Department and NHLDC; DGFP with MIS Department and NIPORT; Directorate of Nutrition Services (DNS) with concerned departments; Department of Drug Administration (DDA); DSs of hospital services, public health, gender issues etc. There should be some other participating nodes outside the MOHFW. These are: NGO Bureau, Ministry of Education/Department of medical education, research institutes on

medical sciences and local offices of some international organizations such as UNFPA, UNDP, UNICEF, and so on.

5.5.1.2 The D-HPIC

The D-HPIC will be the information system at the district level. This implies that there will be 64 district level health and population information systems. Separate management structures prevail at the district level for Health and FP. District health management (Civil Surgeon) reports to the Health Directorate and is responsible for general health services and the district referral hospital. Family planning management (Deputy Director, FP) reports to FP Directorate and is responsible for FP and related MCH and reproductive health services. Hence District Civil Surgeon and Deputy Director of Family Planning will be the main contributing as well as receiving agency of the D-HPIC under the direct coordination of the Deputy Commissioner (DC). The physical setup of the system may be at the District hospital or at the District Health Complex.

5.5.1.3 Up-HPIC

The Up-HPIC will be the functional organ of the proposed information system at the rural Upazilla level. Upazila Health Complexes (with 31/50 hospital beds) serve as the first-level referral level facility and provide outpatient general health and MCH services plus inpatient care, with six beds reserved for family planning and MCH. While usually under the same roof, Upazila Health and Family Planning staff works under separate lines of command. Staffing norms foresee, on the health side, nine doctors, two Medical Assistants, a pharmacist, radiographer and an EPI technician and staff nurses, joined on the family planning side by Upazila Family Planning Officer, Medical Officer (MO-MCH), Assistant Family Planning Officer, Senior Family Welfare Visitor, two Family Welfare Visitors and other support staff. The UHC is responsible for inpatient and outpatient care, family planning and MCH services, including clinical contraception, and for disease control. The physical setup should preferably be at the UHC compound. Activities of the

information system should be administrated by the Upazila Nirbahi Officer (UNO) with direct participation of the Upazila Health Officer and Upazila Family Planning Officer.

5.5.1.4 Un-HPIC

The base level of the information system is the Union Health Population information Center (Un-HPIC). The physical set up will be at the Union Health and Family Welfare Centers (UHFWC). The UHFWC is staffed by Family Welfare Visitor (FWV) with three paramedics, Sub-Assistant Community Medical Officer (SACMO), Family Welfare Assistant (FWA), and Pharmacist providing family planning, maternal and child health services and some curative care. The FWV will be the coordinator of the information system with the supported staff including SACMO, FWC and Health Assistant. The FWA and Health Assistant will be responsible for sending health messages to as well as collecting data from the households at the ward level.

5.6 Operational framework

The NHPIC will be a decentralized network based information system that aims at connecting all institutions with their information resources and serving as the national reference and information center in the health, population and nutrition sector in the country. The administrative structure of the system also indicates that the operational boundary of the NHPIC encompasses four levels of operational wings that will range from the capital city to the rural areas. It has been stated earlier that the system will have a dual band of operations: the first one is the in-house functions and the second one is networking and communication functions.

5.6.1 In-house functions

The in-house activities include the information tracing, capturing, accessioning, processing, and other preparatory works. It aims at building a central databank for the NHPIC. The in-house functions are as follows:

i. Tracing out national and international literature on health and population with cooperation of National Health Library and Documentation Center (NHLDC) and the National Library of Bangladesh.
ii. Cooperative acquisition of books, current periodicals and other sources both in printed and electronic format.
iii. Creating central databank for bibliographic items, publishers, vendors.
iv. Creating text database for e-books, articles of e-journals, news clippings and other electronic documents.
v. Digitization of rare books, exchanged items and other documents having high information values but rarely available.
vi. Creating user profile.
vii. Preparing bibliographies and indexes of the network resources together with specific location of the item in the network.
viii. Preparation of directories/manuals and other reference sources as joint ventures of the NHPIC and MOHFW and its concerned departments.
ix. Preparation of newsletters.
x. Photocopying/Reprographic service.
xi. Preparing directory of government and non-government hospitals, clinics, specialized diagnostic centers across the country.
xii. Preparing directory of medical specialists.

5.6.2 Networking and communication

The nodes of the NHPIC will contribute to the central databank through a decentralized network. The network members and beneficiaries will access and share the NHPIC resources through web portal. Thus the operational framework will pay special attention on the system network and communication issues. It includes:

i. Setting up LAN in the NHPIC and the participating organizations (if necessary).

ii. Designing complete web portal for the NHPIC which should include the following options:

a) Complete bibliographical web database having classified directory link and searching facilities.

b) Publishing text database for e-books and articles of e-journal and printed text converted to digital document.

c) Publishing government circulars/gazettes forms and messages, posters and MIS reports in the concern sectors on the web portal.

d) Publishing and periodic update of the National Directory of Hospitals, clinics, specialized diagnostic centers.

e) Publishing and updating biographical directory for the national medical specialists.

f) Display collection updates and publishing current awareness bulletin.

g) Classified linked directories of other national and international web resources on the related disciplines.

h) Links to national international daily newspapers and links to the web resources other government, non-government and autonomous institutions.

i) Personal website with mail box facilities.

iii. Provision of Electronic Document Delivery (EDD) both from the service desk and the web server.

In the decentralized network based system each member information system will perform their acquisition, processing and other works within their own working environment but according to the network agreement each member will avoid purchase duplication, emphasis on electronic documents rather than printed one so that free flow of these resources among the participated members will be easy and cost effective.

The processing activities will also be decentralized. Each node will prepare the bibliographical database at their own institution and send it to the NHPIC periodically with a Common Communication Format (CCF) preferably using US-MARC3 format so that the database have international acceptance and compatibility. The nodes may print card catalog from the database for their internal use. The e-books, articles of e-journals and other text data should be stored in text database as pdf file(portable data format to be read by acrobat reader). The bibliographical record having link properties to the text files (if any) will be maintained by the central databank of the NHPIC as well as by the originator/source/owner institution.

The system resources can be accessed by dual mode: i) personal visit to NHPIC and participating information centers and, ii) Internet. The system must maintain registration of individual users. The members of the participating institutions will also enjoy information services. All users can browse the web resources of the NHPIC over the Internet. However, for downloading e-books, journal articles, reports, manuals, etc. each user must prove his/her individual or institutional identity. The NHPIC web resources will also be accessible by the district and upazila level information centers through dial-up connection to the central web server/gateway. The system has also a future ambition to include district and upazila health complex under optical fiber network and Union Health and Family Welfare Center (UHFWC) at least dial-up networking when the communication infrastructure will permit.

5.7 Equipment and infrastructure

During the last decade there has been a tremendous development in the computing and communication sector in the country. This growing information and communication capabilities already facilitate some information flow to and communication among different level of people in the country. However, the application of ICT in library and information centers especially in the health and population sector is lagging far behind of other sectors. The study result

has shown that around 50% libraries have been adapting and using information technologies for their own purposes especially in-house functions randomly and without any long range plan. Much more would be possible if all the capacities could grow in a coordinated way, guided by a comprehensive vision.

Ideally, the set up of the NHPIC will be technology based. All departments and working sections of the NHPIC (central office to rural UHFWC) wiil be quipped with necessary computing communication facilities. At the central office there will be a dedicated LAN server responsible for total network management and information sharing among the functional units. The acquisition department should have online access to publishers and vendor's catalog, ability to receive online request from the remote users, upload and downloading facilities. The digitization and reprographic section should be equipped with high speed digital scanner, printer, CD/DVD writing facilities photocopier, and microform equipment. To ensure circulation system and inventory, the desk computer and computers at the reading room and reference section must be connected to the central data server with necessary privileges.

In the requirement analysis, it has been stated that apart from computers, successful implementation of the proposed system will heavily depend on communication technologies. The NHPIC will also maintain a dedicated web server for answering all sorts of information and reference questions from the remote users. For effective services interaction between http server and browser PC and satisfactory uploading and downloading functions, the server should have communication channel having at least two mbps bandwidth. At the present situation, information systems at upazila and district level can use dial-up connection to the central server in Dhaka, Particularly successful design and implementation of UpHPIC will be more difficult due to technological barriers. Because most of the union council office in the country are still of reach from electricity and telecommunication facilities. Though some private telephone operators provide cell phone facilities, it is not cost effective. To connect the central server from the rural UHFWC, they have to

dial up through cell phone which is very difficult. Each UHFWC should have a computer for MIS data collection, compilation and manipulation under a professional information worker. If the communication facilities improve, particularly connected with optical fiber backbone network, the information resources can be mobilized from center to the grass-root level in an easy and cost effective way in near future.

5.8 Design

System design is the high-level strategy for solving the problem and building a solution. System design includes decisions about the organization of the system into sub-systems, the allocation of sub-systems to hardware and software components, and major conceptual and policy decisions. Being a nation-wide information system, the design of the NHPIC will be somewhat complex.

5.8.1 Sub-systems

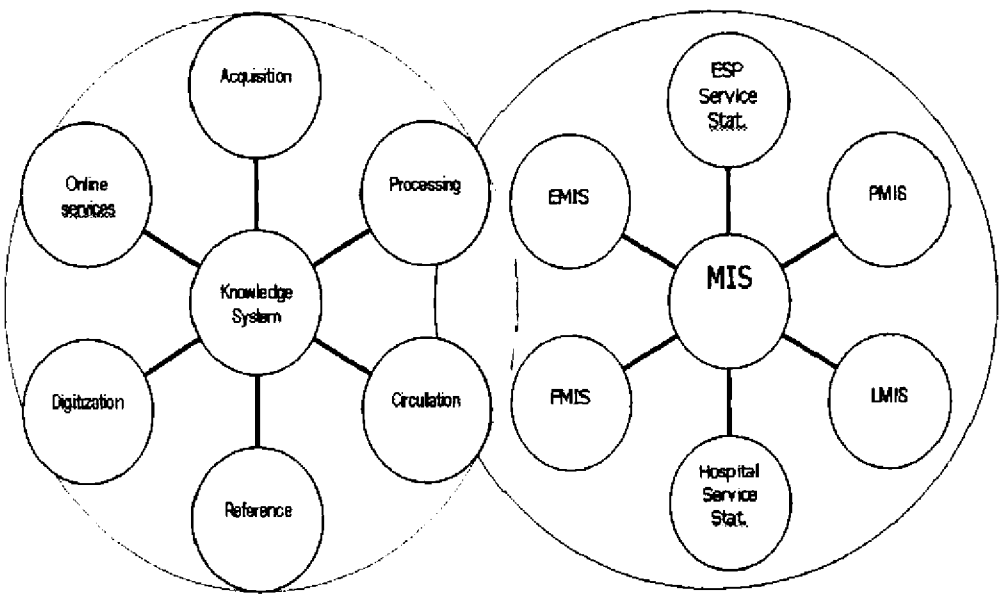
For all but the smallest applications, the first step in system design is to divide the system into a small number of components. Each major component of a system is called a sub-system. Each sub-system encompasses aspects of the system that share some common properties and similar functionality, the same physical location, or execution on the same kind of hardware. A sub-system is usually identified by the services it provides. A service is a group of related functions that share some common purpose. The decomposition of systems into sub-systems may be organized as a sequence of horizontal layers or vertical partitions. Considering the nature of the NHPIC the information system can be decomposed into two sub-systems: a) A knowledge base system and b) organizational MIS. Each sub-systems will be consisted of more than one logical sub-sub-systems or working modules. The sub-systems and working modules have been mentioned below with the basic responsibilities of each.

5.8.1.1 Acquisition sub-system

The fundamental objective of the sub-system will be to trace out national and international Information sources of information on health, nutrition, population and related disciplines as well as building a comprehensive collection preferably on electronic media through cooperative acquisition. To attain these objectives the acquisition sub-system will do the followings:

a) Receiving online and offline request for documents from the users
b) Maintain database of publishers, publishers catalog as well as close relationship with book vendors, distributor and local and foreign publishers.
c) Coordinate the book selection and the total process of acquisition with participating members of the network.

Figure 5.2: NHPIC sub-system



d) Selecting rare books, physically damaged documents re-bindable and other damaged documents having information values for digitization and cooperate with the digitization department.

e) Take necessary steps for document procurement services-collecting document which are not available in the information center or to the networked members from out side the system area as and when requested by the user.

f) Prepare data sheet with detailed bibliographical and acquisition related data for entry by the processing section.

5.8.1.3 Processing

The processing sub-system aims at efficient storage and preparatory activities of information searching and retrieval. The processing system of NHPIC will be responsible for:

g) Design and maintenance of central bibliographic database and publish union catalog;

h) Design and maintenance of full text database for e-books, articles of e-journals, handbooks, training guide, manual and other electronic documents;

i) Creating users profile;

j) Prepare bibliographies, reading lists in response to the query of users and service desk; and

k) Periodic stock taking and verification of collection in collaboration with the acquisition section.

5.8.1.4 Reference and information

It has been stated earlier that the NHPIC will be one of the large reference centers in the health and population sector in Bangladesh. Thus, the scope of the sub-system will be answering all reference questions and information support at the service desk as well as through online services across the country. More specifically the reference and information sub-system will be responsible for:

i. Providing location of specific document within the system database;

ii. Preparing bibliographies, reading list as and when requests are received online or from the users visiting the center;

iii. Answering specific query for doctors, medical specialists, clinics, hospitals, diagnostics centers, pharmaceutical industries etc.;
iv. Guiding the researchers in literature searching;
v. Maintaining directory of organization, hospitals and clinics, biographical directories of doctors and medical specialist and researchers, yellow pages, etc.

5.8.1.5 Digitization, reprography and publication unit

The basic responsibilities of the digitization unit will be to convert paper media resources to electronic media, desktop publication and document reproduction. More specifically this section will be responsible for:

i. Collecting publications of different organs of the MOHFW particularly the soft copy to enrich the digital collection.
ii. Scanning old printed documents, manuscripts, graphical materials, archival documents and converting relevant images to text through OCR (Optical Character Recognizer).
iii. Cutting health and population related news and other issues from online daily newspaper and scanning clippings from published newspapers. Building data base with the clippings.
iv. Preparation of hand books, training manuals and other government publication with the joint collaboration of the concerned ministry and departments.
v. Conversion of micro text to digital text and other reprographic functions e.g. photocopy, periodic backup of electronic texts and bibliographic data, etc.

5.8.1.6 Online services

One of the most important aspects of the information system is that the NHPIC will ensure online accessibility to all of its information resources. The necessary online services/facilities from the NHPIC web server have been discussed in detail at the operational framework. It requires a dedicated web server with necessary bandwidth and necessary infrastructure for EDD from

the client side. The web portal should have full text database and free text searching supports.

5.8.1.7 System engineering

The system engineering and administrative unit will be responsible for overall design and maintenance and its management issues of the systems. Specifically speaking, the system engineering subsection will ensure the following:

i. The set up and maintenance of the physical network of NHPIC
ii. Necessary hardware and software support to the concerned department
iii. Installation and maintenance of the web server, hosting site and periodic updates
iv. Data and system security

5.8.1.8 Administration

The administration will ensure the following:

i. Periodic Stock taking and verification
ii. User orientation program
iii. Management of inter-library loan
iv. User interest surveys
v. Joint research projects
vi. Arrangement of in-service and refresher training and exchange of personnel
vii. Workshops and meetings
viii. Keep liaison with other national, regional and international networks in the field of Health, population and related discipline for cooperation and exchange of information.

5.8.1.9 MIS

Within HNPSP MIS is functioning under two separate streams independently: MIS of DGHS and MIS unit of DGFP. Both the streams are maintaining

separate set up and procedures from the field level data collection to the compilation at the central level. In the background study it has been discussed that most of the studies on existing MIS performance are full of criticism both in discrete and integrated MIS. According to them, from the very beginning the then MIS had been reported about a lot of inconsistencies in data recording and reporting format in terms of coverage, capturing, coding, transmission, analysis and reporting. Though the former UMIS was severely criticized considering the existing structure and activities of new paradigm of the health and population sector programs, the need for a unified MIS is much higher than in the past due mainly to the following reasons:

a) Broadening the scope of health and population sector services under ESP and hospital services
b) Inclusion of nutrition sector programs and two other functional units (The Directorate of Drug Administration and The Directorate of Nursing Services) in the current MIS program.
c) Successful implementation of sector-wide management (SWM).
d) Lack of system to ensure free flow of information among HNPSP implementation units and other research institutes.

Under the proposed structure the MIS will be one of the major parts of the integrated information system for health and population sector programs. In the system, the Health MIS and FP MIS will be integrated and will share the common databases. The whole process will be administrated by certified information professionals with the assistance of FP, Health and NGO workers. The sub-system will have enough provision for data validation checking, eliminating duplication at the grass-root level by skilled manpower. One of the limitations of this study is that MIS forms and reports of the running system and UMIS have not been tested for the integrated environment. So there is a further scope for research for testing workability and reconstructing forms and procedures if necessary.

The former UMIS was consisted of five sub-systems though the each one did not result in successful implementation during the HPSP period (1998-2003). These were: a) Service/performance MIS with ESP and hospital, b) Logistic management (LMIS), c) Personnel management (PMIS), d) Financial management (FMIS), and e) Epidemiological surveillance (EMIS). Besides this routine service statistics, the NHPIC MIS sub-system will include some additional modules e.g. household survey, birth registration, disease surveillance, census, behavioral risk surveys etc.

5.8.2 System Input and output

The input data to be input for the central database will include:

i. Bibliographical data and other metadata- This category includes data about the description of the data/information sources e.g. books, articles of journals, news clippings, users, etc.

ii. PDF electronic document: the NHPIC will store all e-books, e-journal and scanned and OCR documents as acrobat PDF (Portable File Format). The bibliographical description will be at the database with a link field to the pdf file so that each bibliographical item can be accessed with full text from the Internet browser.

iii. HTML objects: user-system interaction will be supported with HTML at the web server. Client-server communication, sending request for books and journals, document, notification of user and systems, user profile sending and periodic update, commentary, discussion, e-seminar and conferences, etc. will be available on the Internet as html file.

iv. MIS data: The main data sources for MIS are household, community clinics, Union Health and Family Welfare Center at the rural villages and union level, Upazila Health Complex (UHC) and Thana FP office at the upazila level, District

Hospitals and Maternal and Child Welfare Center (MCWC) at the district level. At present, the data collection system comprised a set of nine types of forms, registers, slips, and cards.

The MIS data at the rural villages will be collected by the FWA, Health Assistants and NGO workers under the direct coordination of the MIS unit of UnHPIC at the UHFWC. Information officer of the MIS unit will be responsible for all sorts of training for the data collector, encoder and entry operators. It will also cross check and ensure data validation and send the raw data to the upazila level. In the same way UpHPIC will be responsible for data collection from UHC and other places as well as first compilation at upazila level and DHPIC at the district level. The MIS section of UpHPIC must maintain database of the raw data, will entry and editing facilities and input them at the database and send it to the central MIS.

Each library and information center will produce the metadata of books, monographs, journal articles, news clippings and others information sources on a common data entry worksheet. However, it will be difficult for the network members to change or to make uniformity in classification schemes or list of subject headings for bibliographical description. Those who have no ICT facilities will fill up the data entry worksheet after purchase. Another group directly will enter data into their own computer system and send copy of the records to the NHPIC.

A wide variety of output will be available from the proposed information system in response to query of user and in anticipation of demand. These will include both printed and electronic documents e.g. printed books journals, newspapers, and their Xerox copy; e-books, articles of e-journals, soft copy minutes, government publications, proceedings of seminar and workshop, etc. These system output will be available both from the desktop PCs in the center as well as remote online access through http server. Besides complete bibliographical information and reference links the web portal of the NHPIC

will also publish and update necessary MIS forms, reports and other web directories.

5.8.3 Database and interface design

The NHPIC will maintain a centralized database with diversified objects and relationships having multi dimensional accessibility. The central database will have a three-tier client/server computing architecture. The three tiers that will make up this approach are:

i. *The client*, sometimes called the presentation layer, is where information is displayed to the user, and input is accepted for processing.

ii. *The application layer* is where all the processing logic such as data integrity, validation check, query processing rules are given to the Database Administration (DBA). For application development, the system will use Oracle 10g Developer Suit.

iii. *The data layer*, often called the back end, plays a role in the storage of information to satisfy requests placed by the other two layers. The back end of the NHPIC database will be developed using SQL server enterprise edition.

The following categories of databases will be maintained for the proposed information system:

i. *Bibliographic database*: The bibliographical database will be integrated in nature and will encompass complete bibliographical data of all type of information sources. It will include all text books, journals, reference sources, newspapers and magazines, news clippings, rare collection, manuscripts, etc. Besides the common attributes for catalog entry, there will be some additional attributes such as publication_type for filtering the resources by type of publications; Link attributes "TEXT" to

link the full text pdf file if any. Three separate tables will be used for the database- a) book_master b) copy c) Author and d) Subjects heading. Each title will be identified in the master table by a record_number as primary key. The copy table will be consisted of some functionally dependent variables such as edition year, price, etc. Accession_no will be the primary key as principal identifier of each copy and Record_number will be the foreign key. The author and subject heading will be decomposed as separate data table with record_number as foreign key because of their multi valued dependency.

ii. *User database*: To introduce SDI, circulation system and other personalized information services the NHPIC will maintain institutional and personal user profile. In the institutional profile the database will store data relating to their objectives, functions and future endeavors. The working professionals of those organizations will also be highlighted in terms of standard subject heading and key words. The system will use common tools for defining the subject interest of users and the subject headings of publications to avoid conflict during query.

iii. *MIS database*: A synchronized database is a prerequisite for smooth functioning and successful implementation of the health and population sector activities across the country. It has been stated earlier that due to the limitation of this study the workability MIS forms have not been tested. Thus design of the database will be the subsequent factor of form reconstruction.

5.8.4 Interfaces

A wide variety of user interfaces will be available in information manipulation. Forms and queries and necessary triggers will be developed using Oracle 10g developer suit. Though there will be several tables for bibliographical data, the entry form will be designed in an integrated fashion on a single form. Besides the in house data entry format, remote information center can enter data using html data forms by connecting the NHPIC web server. From the home page

one can search desired data or click link directory. Besides direct visit to NHPIC, users -both institutional and personal- can seek membership through online. Remote users can apply for membership through interactive membership form available at the web site of NHPIC. The web server of the system will provide design wizard for personal web site with mailbox, homepage for hospitals, clinics and diagnostic centers, etc. The MIS forms and procedures will also be available on the Internet.

5.8.5 Network design

5.8.5.1 Possible participation in the network

Ministry of Health and Family Welfare and its concerned directorates, departments, population and health care related institutions will be the members of the information network. More specifically the following organizations may the active members:

i. Government body including the MOHFW; Directorate General of Health Services (DGHS) and Directorate of Family Planning (DFP) with their MIS unit, Directorate of Drug Administration (DDA), Directorate of Nursing Services (DNS).
ii. All government and non-government medical colleges, universities and specialized health care institutes and their library and information units.
iii. Specialized research institutes and information centers in the field of health, population and nutrition.
iv. All medical college hospitals, specialized hospitals, clinics and diagnostic centers (both public and private), district and upazila hospitals, MCWC and UHC.
v. Academic colleges, universities and institutes in the field of health, population and nutrition and their information centers.
vi. NGOs and other social organizations interested in different aspects of health, population and nutrition.
vii. Foreign mission organizations in the sector such as WHO, UNFPA, UNDP, Unicef, Save the Children (USA, UK), UN information center, etc.

viii. Internal and external networks such as POPIN. HeLLIS and similar type of links to international networks.

5.8.5.2 Topology

Considering the scope, role of computer and type of services, a mesh topology can be suggested for the proposed NHPIC network. In the topology the central data server, http server, ftp/mail server, etc. will be connected with high speed optical fiber ring backbone. The internal computers will be connected to the servers at ring through a common gateway. The remote users can access network resources through the proxy/gateway and http server. At the client side there may be small LANs with bus or star architecture. The LANs of network members may have a server from which its other PCs of the LAN can access to the central data bank or it may be peer-to-peer network where all PCs in the network are connected. Access to the central information resources will be ensured through a common proxy server at the central NHPIC. The LAN or individual PCs at the district and upazila level will also connect to the central server through dial-up networking.

5.8.5.3 Network and communication media

The carrier of the token ring will be optical fiber. Other computers in the system will be connected to different servers via the proxy. For effective communication with the central proxy the system should have multiple media of access, e.g. cable modem, DHL modem, radio link etc. The client PCs will be connected using twisted pair cable and Internet switches. Outside members of the network will use coaxial cable network or dial-up or radio link until optical fiber network will be introduced for the purpose.

5.8.5.4 Client-Server

The clients that are often called 'front-end', request the server for specific operation such as storage, searching, downloading etc. The server will be responsible for following tasks.

1. Client-server application
2. Backup
3. Communication
4. Database
5. Email, fax
6. Monitoring
7. Printing
8. User directories
9. Shared directories

5.8.5. 5 Software

The operating system of the central server will be LINUX. There will be no bindings in choosing operating system for the client machines. However, both client and server can use the following software:

- SQL server enterprise edition for database management
- Developer 10g suit for forms, query, report, triggers and procedures
- Adobe Acrobat reader W writer
- MS office for word processing, spread sheet analysis, presentation design, document imaging and OCR (Optical Character Recognizer)
- Adobe Photoshop, Illustrator for document scanning and other graphics design
- MySQL, Java and PHP for web site design hosting, maintenance.

5.9 System requirements

Being a nation wide integrated information system the NHPIC warrants some basic requirements for its successful design and implementation. It has been mentioned earlier that one of the major objectives of the system is that it will bring no major changes in the existing administrative, policy level decision and infrastructure during planning. The system will also be committed to maximize the use of existing resources. Thus the system requirements of NHPIC will like that of a new system, rather it demands some policy

decisions, equipments and infrastructural facilities available in the country. The new system requirement and feasibility has been outlined below.

5.9.1 Policy

i. There must be a policy decision by the government that the information system for the existing health, population and nutrition sector will be integrated and the system must have the capability to meet the knowledge, strategic, management and operation level information needs.

ii. All participating member organizations should have a decision that all information related activities should be library and information center oriented, not scattered.

iii. Willingness among the administration of the institution and information professionals for forming a centralized knowledge base through cooperative acquisition preferably with electronic documents.

iv. Willingness to form a network agreement and mental preparation to own the total system and comply with the rules and regulation.

5.9.2 ICT equipments

v. An optical fiber backbone with a common gateway/proxy with several servers such as data server, directory server, web/http server, ftp server.

vi. Sufficient number of networked computers with necessary printing, backup and other accessories for the NHPIC central office.

vii. At least one high speed scanner for the digitization at the central office of NHPIC

viii. At least one computer at the lowest level of the proposed information system at the union level UNHPIC; three computers at the upazila level UpHPIC and five at the DHPIC. The DHPIC and UpHPIC must have dial-up access to the http server of NHPIC.

i. **Password protection**: All users- nodes and beneficiaries- will be registered by the system administrator. Each users will have to prove their identity with the given an ID with password during system access.

ii. **Firewall**: A firewall will be set to the central server for filtering users' applications and secured data transactions and the internet. Firewall methods will include: a) Packet filters b) Application gateways

iii. **Proxy servers:** There will be central proxy server for handling all communications originating from inside of NHPIC and nodes-side network.

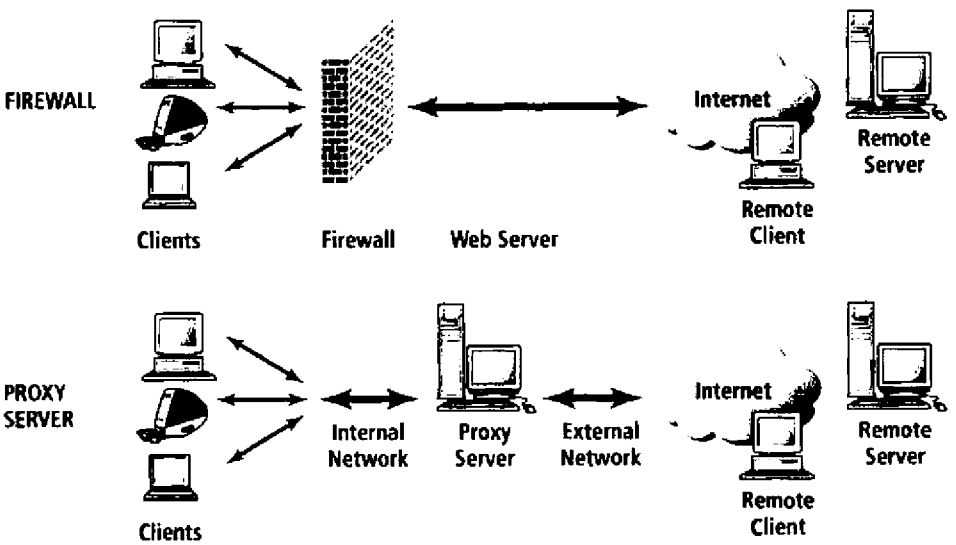


Figure 5.3: Working way of proxy and firewall

5.10.2 Data and transaction security

It ensures the privacy and confidentiality in electronic messages and data packets, including the authentication of remote users in network transactions for activities such as electronic document delivery and on-line payments. The

ix. There should be a VSAT (Very Small Aperture Terminal) with necessary bandwidth to ensure connectivity and smooth transmission of data among the network members.

x. Each participating members library or information center must have at least one computer with printing, scanning and communication facilities to connect the central proxy server.

xi. At least one photocopier and a CD-RW/Combo drive for necessary data back-up and reproduction.

xii. Standard software supports.

5.9.3 Others

xiii. Proper financial provisions

xiv. Professionally trained personnel

xv. A sound library and information policy and system standardization

xvi. Preservation equipment and facilities for printed and electronic documents for all nodes

5.10 System security

From access to exit, all activities of the user and staff will be monitored through close circuit camera from the security corner. A network based information system has two basic aspects of security: a) client-server security and b) Data and transaction security.

5.10.1 Client-server security

The system will use various authorization methods to make sure that only valid user and programs have access to information resources such as databases. Access control mechanisms must be set up to ensure that properly authenticated users are allowed access only to those resources that they are entitled to use. Such mechanisms include password protection, firewalls and proxy.

i. **Password protection**: All users- nodes and beneficiaries- will be registered by the system administrator. Each users will have to prove their identity with the given an ID with password during system access.

ii. **Firewall**: A firewall will be set to the central server for filtering users' applications and secured data transactions and the internet. Firewall methods will include: a) Packet filters b) Application gateways

iii. **Proxy servers:** There will be central proxy server for handling all communications originating from inside of NHPIC and nodes-side network.

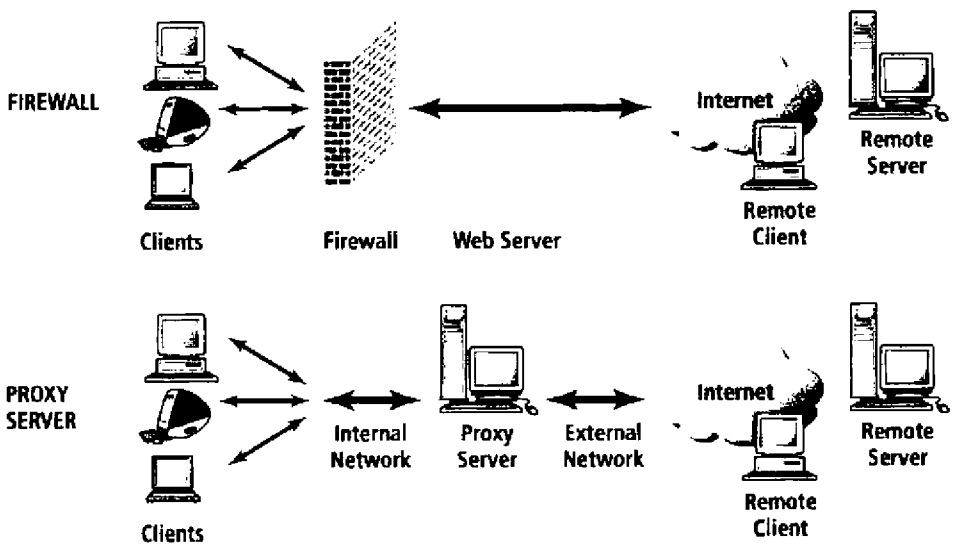


Figure 5.3: Working way of proxy and firewall

5.10.2 Data and transaction security

It ensures the privacy and confidentiality in electronic messages and data packets, including the authentication of remote users in network transactions for activities such as electronic document delivery and on-line payments. The

goal is to defeat any attempt to assume another identity while involved with electronic mail or other forms of data communication. To ensure data and transaction security the following methods may be implemented:

a) **DBA roles and privileges**: The DBA should impose different types of system and object privileges or role to ensure controlled manipulation of the bibliographical and full text database. A privilege is the right to access to databases and execute query where a role is group of privileges to be given to a particular user.

b) **Encryption:** The process of transforming plain text or data into cipher text that cannot be read by anyone other than the sender and receiver. Encryption normally works in the following way:
   i.) message in its original form (plaintext) is encrypted into an unintelligible form (ciphertext) by a set of procedures known as an encryption algorithm and a variable called a key; and
   ii.) Ciphertext is transformed (decrypted) back into plaintext using an algorithm and a key.

c) **Operating system controls**: Authentication and access control mechanisms. All user will enter into the system by proving their individual and institutional identity

d) **Anti-virus software**: Easiest and least expensive way to prevent threats to system integrity

5.11 Implementation

Implementation involves hardware, software, procedure, and human-ware of the new system to the operational stage. To implement the proposed NHPIC, the following activities are to be accomplished, step by step:

i. After formulating the necessary policy and decision, participating members should sit together to formulate network agreements,

cooperative acquisition and distribution policy, library standard, circulation and inter-library loan procedures and other legal issues should be formulated.

ii. Each participating organization/library shall have to be designated as information center for a particular subject or discipline in which it may build up its unique collection. It would concentrate on its core subject. The remaining peripheral subjects may be taken by other institutes where such subjects form the core collection. This needs a detailed survey of collection and its use.

iii. Setting the data collection procedures from rural community clinics, satellite clinics, and UHFWC, and sending the data to UHC. The UpHPIS will enter the data to the prescribed database and send the data file to the central NHPIC.

iv. Programming the systems according to the set flowchart, decision tables, description of inputs, outputs and files, and specification of each procedure, configure and host the web server

v. Each member of the network will prepare bibliographical entries according to the prescribed format and will send it to the central database online. If the participating library can use card form of catalog, they can print card catalog for their internal use. The central data bank will upgrade the data file periodically and publish union catalog.

vi. Testing and debugging program.

vii. Final Implementation of the system that includes the followings:
- Installation of necessary hardware resources
- Installation of software /program
- Appointing human resources
- Training of the personnel

- Prepare any documentation
- Running the system and coordinate the functioning
- Perform follow up and review the evaluation process.

5.12 System constraints and recommendations

Due to the nation wide coverage and technology based operation, the proposed information system may have to encounter the following barriers.

Constraints

1 Most of the libraries hold a huge amount of back dated information resources that have a little information values. Sharing of such type of resources will not be very cost-effective.

2. Most of the libraries and information centers are collecting printed books and journals. Exchange, inter-library loan, sharing and transmission of such media are comparatively more difficult than that of electronic media. But most libraries and information centers are not habituated with electronic media. Not only that, electronic document import and delivery rules and regulations are not user friendly in the subscription of e-books, e-journal and other electronic literature.

3. Major part of information workers has no practical knowledge on networking and web programming. As a result it would be difficult to implement the network based information system before giving them adequate motivation and training.

4. As the system operation will be decentralized, successful implementation of NHPIC will be heavily dependent on how efficiently the member libraries will do their in house functions such as maintaining bibliographical and full text databases, searching and retrieval, web design and hosting and other ICT knowledge and activities. Many practicing librarians have no practical knowledge on the issues.

5. The Internet infrastructure of the country is still very week. Though Internet facilities are available in the capital city and in some district head quarters. Such facilities are not available in most of the districts and upazilas let alone the union level services. In this situation full fledged implementation of such type of system will be very difficult with dial-up connection.

6. Major portion of the users are not familiar with electronic documents. So it will be difficult to rely on only electronic document storage, searching, retrieval and use. The dual mode of operation will be expensive.

7. Without efficient coordination and cooperation among the functional units and unified structure, implementation of integrated MIS will be impossible.

8. The system requires new setup at the union, upazila and district level. It may cause budgetary constraints.

9. Skilled manpower is the prerequisite for the successful implementation of the system. Unfortunately the knowledge and skill level of most of the practicing librarians and supporting staff in health and population sector is still below the expected level.

10. As information science discipline is rapidly changing, the practicing librarians and the concerned staff must be clued-up with the tools and techniques of information manipulation. For this purpose they need refresher training. Most of the libraries have no learning facilities or provision for such sort of training.

11. According to ISO standard, 5% of the institutional budget should be allocated for information works, where the study shows that the library budget ranges from 0.5% to 2%. The inadequate fund allocation and undisciplined expenditure often comes as barriers to initiate any development project and successful endeavors.

Recommendation

1. The proposed information system should have enough provision for creating awareness of the advantages and use of electronic resources among the information professionals and users through seminar and workshop.

2. Through cooperative acquisition each member library and information center of the networked information system must build a sound collection on a particular aspect of health population and nutrition. The specific aspect may preferably be determined by the main focus of the institution. Book selection must be according to users' demand rather than the decision of upper administrative body or donor agencies.

3. Library authority and information professionals should put emphasis on electronic form of documents such as e-books, e-journals during book selection to ensure door step service through email attachment and EDD. Electronic document import and delivery rules and regulations should be user friendly.

4. As Central Focal Point the NHPIC should design the resource sharing agreement through negotiation among the participating member institutions. The agreement must include complete guidelines and standard of information collection, storage, processing, searching, retrieval and transmission; roles and responsibilities of each institutes; code of conduct, interrelation and behavioral issues; information services and mode of delivery, products and expected benefit from the network.

5. Each library and information center should arrange user education and orientation program regularly on the provision and use information services. Particularly at the initial stage of running automated and network based services, there should be provision for personal help in information searching and of library/Information center and different

forms of materials. A mechanism should be developed for periodic user needs and unmet needs assessment.

6. For the development an up to date and integrated information system for the health and population sector there should be adequate financial support.

7. To create positive awareness among the administrators, policy-makers, participating organizations and users on the integrated information, an effective motivational program should be arranged as and when required.

8. Adequate infrastructural facilities should be developed. Particularly for the smooth functioning of the web server of NHPIC minimum 2 mbps bandwidth may be hired form Bangladesh Telephone and Telegraph Board (BTTB). The government ICT sector should take necessary step on an urgent basis for expansion of the optical fiber network across the country.

9. Curriculum and teaching methodologies of library education should be restructured according to the recent trends of the discipline. For professional development especially for the sake of smooth and purposive running of the proposed health and population information system the following issues relating to library education should be considered with due attention:

   - As soon as possible library policy should adopt the principle for arranging refresher training at regular intervals Information professionals in the sector should be encouraged both financially and morally by the government or the parent body in participating local/international seminars/ conferences/specialized training courses etc.
   - The institutions providing library education should be up to date in terms of their curriculum and teaching methodology. Existing

curriculum must be restructured so that after end of the courses a student can achieve dual qualifications (Librarianship and ICT applications). For this purpose, besides the basic techniques of traditional librarianship (manual classification, cataloging, bibliography, indexing, reference, etc.), their curriculum must put emphasis on the applications of ICT in information acquisition, processing, storage, searching, retrieval, dissemination and other issues of digital librarianship. They should be well equipped with recent ICT tools and techniques. To eradicate the phobia of ICT and misconception among the professionals and students, the teaching method must be practice-oriented.

- Within the network of health and population sector libraries and information centers, staff exchange program can be effective for skill development. In this case Ministry of Health and Family Welfare or concerned directorate may take appropriate initiative.

- Educational institutions may organize short courses especially on ICT applications in information work for the practicing librarians.

10. An exhaustive survey should be carried out to identify the existing resources, infrastructural facilities and users needs of the library and information centers of the country for the network. Regular weeding and stock taking program should be launched.

11. Donation of backdated publications should be discouraged. If needed the unnecessary gift items weeded out.

12. The recruitment rules for the information professionals must be restructured and social status should be elevated. They should also be paid higher. The librarian should be the center point in forming and implementing library administration related policy and decisions.

Librarians should have participation in all sorts of administrative, policy making and executive works in the library.

13. Library Association plays an important role in professional development in many countries. The Library Association of Bangladesh pays little attention in professional development. It can play a significant role by organizing seminar, workshop specialized training course for the practicing librarians and information workers in Bangladesh. In many countries there are specialized library associations to lead the librarianship in a particular field. In Bangladesh an association may be formed with libraries and information centers in the health and population sector.

14. Library commission plays important role in the development of professional status and standardization of libraries and the services. Though initiative was taken to enact a library commission in Bangladesh in 2002, still today it has not seen the day light as yet. In the National Library Policy it has been mentioned that "There should be a library in per square kilometers" (Ministry of Cultural Affair 2001: 2). To materialize the vision the government should immediately formulate a suitable library commission in order to set recruitment rules, pay structure, library standard, etc.

15. Meetings, seminars, etc. of library and information professionals, administrators and users should be organized at regular intervals for evaluation and exchange of opinions concerning problems and development of the network activities.

16. Liaison should be established with other regional and international networks for cooperation and exchange of information and expertise in information handling.

5.13 Conclusion

Hopefully there is no denial in the fact that to encounter the challenges of the 21st century in the health nutrition and population sector programs (HNPSP) in Bangladesh, the role of dependable information system is imperative. Integration among the scattered information activities across the country is also a prerequisite for such a suitable information system. The proposed National Health and Population Information Center (NHPIC) may work as a sketch for establishing a need based system that will ensure free flow of information from the policy level to the extreme end of implementation of HNPSP. During design of the system due attention has been paid to the socio-economic, technical, financial, infrastructural, policy and administrative issues of the country. Thus the system is expected to be realistic in information system for the HNPSP in Bangladesh. Every plan has a 'movable horizon', i.e. it is never definitive but can and should be improved in the light of experience, and will inevitably have to be adapted to the changing situation. It is important, therefore, that the plan should include the provision for evaluation and amendment as and when necessary.

The implementation of the NHPIC, in order to achieve the goal of a proper health, nutrition and population information system, is a challenging task with multi-agency involvement that depends on mutual cooperation between organizations and individuals willing to participate in the information system. In spite of the operational adaptability and user friendliness the system will also be dependent on effective coordination and control among the existing functional units of HNPSP for its successful implementation. It is admittedly an ambitious undertaking, however, if provided with necessary infrastructural, physical, financial and technological facilities for the creation of NHPIC ,

Bangladesh will hopefully be witness of the free flow of information across the health, nutrition and population sector.

5.14 Limitations of the study

Despite these findings and implications, this research does have some limitations. These are:

1. The libraries and information center have been selected as samples are well known libraries in Bangladesh, other less significant libraries could not be included due to their inapplicability to answer the data collection instrument. The data of these libraries may have impact on the overall assessment of libraries in the concerned sector.

2. The study findings are based on small sample size-12 libraries and 120 users taking 10 from each library. Thus, the generalization of our results must be assessed carefully, and the conditions under which these results hold warrant further investigation.

3. The applicability of existing MIS forms and reports has not been examined for the proposed integrated environment of NHPIC.

4. Acceptance and usage of electronic documents and network resources to the general information users and information professional may demand further research.

APPENDICES

Appendix 1: Annex Tables

Table 1: Distribution of Digital Collection status among the sample libraries by type

Status of Digital collection	Health		Population		Nutrition		HPN		Group Total	
	N	%	N	%	N	%	N	%	N	%
Have Digital collection	2	50.0	2	66.7			2	66.7	6	50.0
No Digital collection	2	50.0	1	33.3	2	100.0	1	33.3	6	50.0
Group Total	4	100.0	3	100.0	2	100.0	3	100.0	12	100.0

Table 2: Distribution of mode purchase by type of libraries

Mode/Methods of purchase	Health		Population		Nutrition		HPN		All	
	N	%	N	%	N	%	N	%	N	%
Vendor	3	75.0	1	33.3	1	50.0	3	100.0	8	66.7
Publisher	-	-	-	-	-	-	-	-	-	-
Direct purchase from market by librarian	1	25.0	0	.0	1	50.0	0	.0	2	16.7
Administration from market place	0	.0	2	66.7	0	.0	0	.0	2	16.7
Total	4	100.0	3	100.0	2	100.0	3	100.0	12	100.0

Table 3: Distribution of shelf arrangement by type of sample libraries

Arrangement methods	Health		Population		Nutrition		HPN		All	
	N	%	N	%	N	%	N	%	N	%
Call number	4	33.3	2	16.7	1	8.3	3	25.0	10	83.3
Accession number	-	-	-	-	1	8.3	-	-	1	8.3
MFN/Record number	-	-	-	-	-	-	-	-	-	-
List by almerah	-	-	1	8.3	-	-	-	-	1	8.3
No methodology followed	4	33.3	3	25.0	2	16.7	3	25.0	12	100.0

Table 4: Distribution of seating arrangement in the reading room and reference section by type of the sample libraries

	Health			Population			Nutrition			HPN			All libraries		
	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max
Seating arrangement (reading room)	230	45	750	18	15	20	25	15	35	55	25	100	99	15	750
Seating arrangement (reference section)	20	20	20	15	15	15	.	.	.	38	15	60	28	15	60

Table 5: Distribution staffing pattern by type of sample libraries

category staff	Health		Population		Nutrition		HPN		All	
	sum	Mean	sum	Mean	sum	Mean	sum	Mean	sum	Mean
Professional	15	4	4	1	3	2	18	6	40	3
Nonprofessional	29	7	7	4	4	2	29	10	69	6

Table 6: Status of staff sufficiency by type of sample libraries

	Health		Population		Nutrition		HPN		All	
Status	N	%	N	%	N	%	N	%	N	%
Sufficient	1	8.3	1	8.3	1	8.3	2	16.7	5	41.7%
Insufficient	3	25.0	2	16.7	1	8.3	1	8.3	7	58.3%
Total	4	33.3	3	25.0	2	16.7	3	25.0	12	100.0

Table 7: Status of in service training in the sample libraries by type

Availability of in-service training	Health		Population		Nutrition		HPN		All	
	N	%	N	%	N	%	N	%	N	%
Yes	2	16.7					2	16.7	4	33.3
No	2	16.7	3	25.0	2	16.7	1	8.3	8	66.7
Total	4	33.3	3	25.0	2	16.7	3	25.0	12	100.0
Number of training programs participated in the last five years										
Number	Sum	Mean	Sum	Mean	Sum	Mean	Sum	Mean	Sum	Mean
	3	2	-	-	-	-	7	4	10	3

Table 8: Status and pattern of staff evaluation by type of sample libraries

Staff evaluation and evaluation methodology	Health		Population		Nutrition		HPN		All	
	N	%	N	%	N	%	N	%	N	%
Yes	2	16.7	1	8.3			2	16.7	5	41.7
No	2	16.7	2	16.7	2	16.7	1	8.3	7	58.3
Evaluation process										
Service record analysis	2	40.0	1	20.0			2	40.0	5	100.0
Evaluation form by the user groups	1	20.0							1	20.0
Internal exam							1	20.0	1	20.0
Observation	2	40.0	1	20.0			2	40.0	5	100.0
Assignment	1	20.0					2	40.0	3	60.0

Table 9: Distribution of opinion on budget sufficiency by type of sample libraries

Opinion	Health		Population		Nutrition		HPN		Total	
	N	%	N	%	N	%	N	%	N	%
Yes	-	-	-	-	-	-	1	8.3	1	8.3
No	4	33.3	3	25.0	2	16.7	2	16.7	11	91.7
Total	4	33.3	3	25.0	2	16.7	3	25.0	12	100.0

Table 10: Pattern of library building in the sample libraries

Type of Building	Health		Population		Nutrition		HPN		Total	
	C	%	N	%	N	%	N	%	N	%
its own separate building	-	-	-	-	-	-	1	8.3	1	8.3
Within the main building	4	33.3	3	25.0	2	16.7	2	16.7	11	91.7
Total	4	33.3	3	25.0	2	16.7	3	25.0	12	100.0

Table 11: Status of air conditioning of library building by the type of sample libraries

Status of air conditioning	Health		Population		Nutrition		HPN		Total	
	C	%	N	%	N	%	N	%	N	%
Centrally air conditioned	2	16.7	1	8.3	-	-	2	16.7	3	25.0
reading room			1	8.3	-	-	-	-	3	25.0
Stack areas			1	8.3	-	-	-	-	1	8.3
Processing department	1	8.3	1	8.3	-	-	-	-	2	16.7
Administration	3	25.0	1	8.3	-	-	-	-	4	33.3
Staff room	1	8.3	1	8.3	-	-	-	-	2	16.7
No air condition	1	8.3	1	8.3	2	16.7	1	8.3	5	41.7
Total	4	33.3	3	25.0	2	16.7	3	25.0	12	100.0

Table 12: ICT and other infrastructural facilities available by type of sample libraries

Equipment and facilities	Health		Population		Nutrition		HPN		All Libraries	
	Sum	Mean	Sum	Mean	Sum	Mean	Sum	Mean	Sum	Mean
Computer	25	8	4	1	0	0	20	7	49	5
Printer	6	2	3	1	0	0	13	4	22	2
Internet connection	4	1	1	1	0	0	3	1	8	1
Telephone/Fax	6	2	3	1	1	1	7	2	17	2
IPS/UPS/generator	5	3	3	1	0	0	2	7	21	2
Photocopy machine	6	2	1	1	0	0	4	1	11	1

Table 13: Distribution of the types of sample users by sector

	Health		Population		Nutrition		HPN		All	
	N	%	N	%	N	%	N	%	N	%
Researcher	2	1.7	13	10.8	6	5.0	4	3.3	25	20.8
Administrator / policy maker	3	2.5	9	7.5	3	2.5	2	1.7	17	14.2
Doctor	10	8.3	4	3.3			9	7.5	23	19.2
Teacher	8	6.7	11	9.2	7	5.8	2	1.7	28	23.3
Student / Trainee	7	5.8	13	10.8	4	3.3	3	2.5	27	22.5
Total	30	25.0	50	41.7	20	16.7	20	16.7	120	100.0

Table 14a: Distribution of institutional supports for General types of information needs by category of institutions

Institutional support	General information									
	Health		Population		Nutrition		HPN		All	
	C	%	C	%	C	%	C	%	C	%
Institutional library	6	5.0	15	12.5	2	1.7	4	3.3	27	22.5
Nearest library /information center	7	5.8	15	12.5	2	1.7			24	20.0
Personal collection/ library	19	15.8	33	27.5	6	5.0	13	10.8	71	59.2
Library/Collection from colleague/Friend	15	12.5	27	22.5	5	4.2	12	10.0	59	49.2
Internet	23	19.2	27	22.5	2	1.7	14	11.7	66	55.0
Media (News paper/ TV/Radio)	25	20.8	49	40.8	10	8.3	17	14.2	101	84.2
Other			2	1.7					2	1.7
Total	30	25.0	60	50.0	10	8.3	20	16.7	120	100.0

Table 14b: Distribution of institutional supports for supporting types of information needs by category of institutions.

Institutional support	Supporting Information									
	Health		Population		Nutrition		HPN		All	
	C	%	C	%	C	%	C	%	C	%
Institutional library	13	10.8	34	28.3	4	3.3	16	13.3	67	55.8
Nearest library /information center	20	16.7	33	27.5	7	5.8	10	8.3	70	58.3
Personal collection/ library	23	19.2	43	35.8	7	5.8	17	14.2	90	75.0
Library/Collection from colleague/Friend	23	19.2	21	17.5	6	5.0	18	15.0	68	56.7
Internet	20	16.7	39	32.5	1	.8	14	11.7	74	61.7
Media (News paper/ TV/Radio)	7	5.8	17	14.2	3	2.5	2	1.7	29	24.2
Total	30	25.0	60	50.0	10	8.3	20	16.7	120	100.0

Table 14c: Distribution of institutional supports for Comprehensive information needs by category of institutions

Institutional support	Comprehensive information									
	Health		Population		Nutrition		HPN		All	
	C	%	C	%	C	%	C	%	C	%
Institutional library	29	24.2	40	33.3	7	5.8	20	16.7	96	80.0
Nearest library /information center	26	21.7	48	40.0	8	6.7	14	11.7	96	80.0
Personal collection/ library	17	14.2	43	35.8	9	7.5	16	13.3	85	70.8
Library/Collection from colleague/Friend	20	16.7	29	24.2	6	5.0	14	11.7	69	57.5
Internet	21	17.5	43	35.8	3	2.5	16	13.3	83	69.2
Media (News paper/ TV/Radio)	3	2.5	13	10.8	1	.8	1	.8	18	15.0
Total	30	25.0	60	50.0	10	8.3	20	16.7	120	100.0

Table 14d: Distribution of institutional supports for recreational information needs by category of institutions

Institutional support	Recreational Information									
	Health		Population		Nutrition		HPN		All	
	C	%	C	%	C	%	C	%	C	%
Institutional library	3	2.5	9	7.5	2	1.7	3	2.5	17	14.2
Nearest library /information center	8	6.7	8	6.7	-	-	2	1.7	18	15.0
Personal collection/ library	16	13.3	29	24.2	4	3.3	14	11.7	63	52.5
Library/Collection from colleague/Friend	6	5.0	15	12.5	1	.8	-	-	22	18.3
Internet	26	21.7	36	30.0	3	2.5	13	10.8	78	65.0
Media (News paper/ TV/Radio)	26	21.7	60	50.0	10	8.3	19	15.8	115	95.8
Other	-	-	1	.8	-	-	-	-	1	.8
Total	30	25.0	60	50.0	10	8.3	20	16.7	120	100.0

Table 15a: Distribution of experiences with different types of library services by category of institutions: Health

Library and information services	Health							
	Aware		Not Aware		Enjoy in this library		Enjoy elsewhere	
	C	%	C	%	C	%	C	%
Reading room services					30	100.0		
Circulation/Loan/Borrowing privileges	22	73.3	2	6.7	6	20.0		
Reference/information services	6	20.0	1	3.3	23	76.7		
Referral services	6	20.0	11	36.7	13	43.3		
Latest addition list books	12	40.0	6	20.0	11	36.7	1	3.3
Reprographic/reproduction service	8	26.7	3	10.0	19	63.3		
Inter library loan service	12	40.0	17	56.7	1	3.3		
Newspaper clipping service	13	43.3	10	33.3	5	16.7	2	6.7
Current Awareness Service	10	33.3	4	13.3	16	53.3	7	23.3
SDI service	22	73.3	1	3.3				
Electronic/Digital document delivery	9	30.0	15	50.0			6	20.0
Translation services	4	13.3	26	86.7				
Bibliographical service	5	16.7	6	20.0	19	63.3		
Network/Internet services	9	30.0	2	6.7	12	40.0	7	23.3
Information consolidation and repackaging	4	13.3	26	86.7				

Table 15b: Distribution of experiences with different types of library services by category of institutions: Population

Library and information services	Population							
	Aware		Not Aware		Enjoy in this library		Enjoy elsewhere	
	C	%	C	%	C	%	C	%
Reading room services					50	100.0		
Circulation/Loan/Borrowing privileges	17	34.0			33	66.0		
Reference/information services	11	22.0	3	6.0	28	56.0	8	16.0
Referral services	20	40.0	24	48.0	4	8.0	2	4.0
Latest addition list books	43	86.0	5	10.0	2	4.0		
Reprographic/reproduction service	27	54.0	1	2.0	22	44.0		
Inter library loan service	17	34.0	33	66.0				
Newspaper clipping service	34	68.0	16	32.0				
Current Awareness Service	26	52.0	22	44.0	2	4.0	8	16.0
SDI service	42	84.0						
Electronic/Digital document delivery	21	42.0	29	58.0				
Translation services	12	24.0	38	76.0				
Bibliographical service	29	58.0	12	24.0	9	18.0		
Network/Internet services	36	72.0	7	14.0			7	14.0
Information consolidation and repackaging	5	10.0	45	90.0				

Table 15c: Distribution of experiences with different types of library services by category of institutions: Nutrition

Library and information services	Nutrition							
	Aware		Not Aware		Enjoy in this library		Enjoy elsewhere	
	C	%	C	%	C	%	C	%
Reading room services					20	100.0		
Circulation/Loan/Borrowing privileges	12	60.0			8	40.0		
Reference/information services	6	30.0	1	5.0	7	35.0	6	30.0
Referral services	10	50.0	8	40.0	2	10.0		
Latest addition list books								
Reprographic/reproduction service	10	50.0	5	25.0	5	25.0		
Inter library loan service	14	70.0	6	30.0				
Newspaper clipping service	14	70.0	6	30.0				
Current Awareness Service	15	75.0	4	20.0	1	5.0	5	25.0
SDI service	15	75.0						
Electronic/Digital document delivery	8	40.0	12	60.0				
Translation services	2	10.0	18	90.0				
Bibliographical service	11	55.0	8	40.0	1	5.0		
Network/Internet services	19	95.0	1	5.0				
Information consolidation and repackaging	2	10.0	18	90.0				

Table 16d: Distribution of experiences with different types of library services by category of institutions: HPN

Library and information services	HPN							
	Aware		Not Aware		Enjoy in this library		Enjoy elsewhere	
	C	%	C	%	C	%	C	%
Reading room services					20	100.0		
Circulation/Loan/Borrowing privileges							9	45.0
Reference/information services	4	20.0	1	5.0	15	75.0		
Referral services	3	15.0	11	55.0	2	10.0	4	20.0
Latest addition list books	4	20.0	2	10.0	14	70.0		
Reprographic/reproduction service	4	20.0	1	5.0	15	75.0		
Inter library loan service	8	40.0	9	45.0			3	15.0
Newspaper clipping service	14	70.0	2	10.0			4	20.0
Current Awareness Service	6	30.0	1	5.0	13	65.0	1	5.0
SDI service	6	30.0	10	50.0	3	15.0		
Electronic/Digital document delivery	9	45.0	7	35.0	4	20.0		
Translation services	12	60.0	7	35.0	1	5.0		
Bibliographical service	10	50.0	2	10.0	8	40.0		
Network/Internet services	6	30.0	2	10.0	12	60.0		
Information consolidation and repackaging	1	5.0	19	95.0				

Table 17: Distribution of expected mode of information delivery from the library/ information centers by category of institutions

Mode of service delivery	Health		Population		Nutrition		HPN		All	
	C	%	C	%	C	%	C	%	C	%
By your personal visit	21	17.5	37	30.8	17	14.2	14	11.7	89	74.2
Electronic Document Delivery	12	10.0	12	10.0	5	4.2	6	5.0	35	29.2
Attachment with email	26	21.7	44	36.7	17	14.2	16	13.3	103	85.8
Over telephone/Fax	6	5.0	11	9.2	4	3.3	2	1.7	23	19.2
By letter/Messenger	4	3.3	2	1.7	1	.8			7	5.8
Access to the library web site	26	21.7	41	34.2	16	13.3	20	16.7	103	85.8
Total	30	25.0	50	41.7	20	16.7	20	16.7	120	100.0

Table 18: Distribution of alternative ways to meet unmet needs by category of institution

Alternative ways	Health		Population		Nutrition		HPN		All	
	C	%	C	%	C	%	C	%	C	%
Go to another library	22	18.3	31	25.8	17	14.2	12	10.0	82	68.3
Request the librarian for procurement of document	15	12.5	35	29.2	9	7.5	8	6.7	67	55.8
Search for substitute information/sources	4	3.3	14	11.7	3	2.5	4	3.3	25	20.8
Take assistance from colleague/friends/association etc	21	17.5	33	27.5	13	10.8	17	14.2	84	70.0
Searching internet/web resources	27	22.5	35	29.2	15	12.5	19	15.8	96	80.0
Leave searching	3	2.5	6	5.0	2	1.7	2	1.7	13	10.8
By personal purchase	15	12.5	35	29.2	11	9.2	14	11.7	75	62.5
TV/Radio program	3	2.5	2	1.7			3	2.5	8	6.7
Total	30	25.0	50	41.7	20	16.7	20	16.7	120	100.0

Table 19a: Distribution constraints level and initiatives toward solution in **Tracing out suitable information sources**

Activities and Level of constraint	Researcher/ Scientist		Admin/ policy maker		Doctor		Teacher/ Instructor		Student/ Trainee		All	
	C	%	C	%	C	%	C	%	C	%	C	%
Constraint level												
Extreme problem	13	10.8	-	-	-	-	5	4.2	12	10.0	30	25.0
Considerable problem	8	6.7	4	3.3	13	10.8	15	12.5	7	5.8	47	39.2
A little problem	2	1.7	13	10.8	6	5.0	8	6.7	8	6.7	37	30.8
No problem at all	2	1.7	-	-	4	3.3	-	-	-	-	6	5.0
Total	25	20.8	17	14.2	23	19.2	28	23.3	27	22.5	120	100.0
Initiatives toward solution												
Seek assistance from librarian	8	7.0	17	14.9	9	7.9	13	11.4	13	11.4	60	52.6
Search bibliographical sources	5	4.4	2	1.8	10	8.8	10	8.8	6	5.3	33	28.9
Consult subject expert	4	3.5	7	6.1	5	4.4	6	5.3	8	7.0	30	26.3
Consult colleagues/friends	5	4.4	5	4.4	5	4.4	7	6.1	8	7.0	30	26.3
Internet	10	8.8	-	-	3	2.6	10	8.8	9	7.9	32	28.1
Go to another library	11	9.6	1	.9	6	5.3	6	5.3	4	3.5	28	24.6
Purchase/Subscription	2	1.8	-	-	-	-	4	3.5	5	4.4	11	9.6
Total	23	20.2	17	14.9	19	16.7	28	24.6	27	23.7	114*	100.0

* 120 - 6 sysmiss = 114

Table 19b: Distribution constraints level and initiatives toward solution in getting information quickly

Activities and Level of constraint	Researcher/ Scientist		Admin/ policy maker		Doctor		Teacher/ Instructor		Student/ Trainee		All	
	C	%	C	%	C	%	C	%	C	%	C	%
Constraint level												
Extreme problem	7	5.8	-	-	-	-	6	5.0	16	13.3	29	24.2
Considerable problem	14	11.7	5	4.2	12	10.0	17	14.2	9	7.5	57	47.5
A little problem	2	1.7	11	9.2	9	7.5	5	4.2	2	1.7	29	24.2
No problem at all	2	1.7	1	.8	2	1.7	-	-	-	-	5	4.2
Total	25	20.8	17	14.2	23	19.2	28	23.3	27	22.5	120	100.0
Initiatives toward solution												
Seek assistance from librarian	9	7.8	13	11.3	15	13.0	13	11.3	13	11.3	63	54.8
Search bibliographical sources	1	.9	-	-	2	1.7	1	.9	-	-	4	3.5
Consult subject expert	1	.9	3	2.6	3	2.6	3	2.6	4	3.5	14	12.2
Consult colleagues/friends	10	8.7	3	2.6	7	6.1	10	8.7	14	12.2	44	38.3
Internet	17	14.8	9	7.8	11	9.6	15	13.0	11	9.6	63	54.8
Go to another library	7	6.1	-	-	4	3.5	9	7.8	6	5.2	26	22.6
Purchase/Subscription	1	.9	-	-	-	-	4	3.5	2	1.7	7	6.1
Total	23	20.0	16	13.9	21	18.3	28	24.3	27	23.5	115*	100.0

* 120 - 5 sysmiss = 115

Table 19c: Distribution constraints level and initiatives toward solution in: Getting up-to-date materials

Activities and Level of constraint	Researcher/ Scientist		Admin/ policy maker		Doctor		Teacher/ Instructor		Student/ Trainee		All	
	C	%	C	%	C	%	C	%	C	%	C	%
Constraint level												
Extreme problem	16	13.3	5	4.2	2	1.7	12	10.0	11	9.2	46	38.3
Considerable problem	5	4.2	9	7.5	20	16.7	11	9.2	13	10.8	58	48.3
A little problem	3	2.5	3	2.5	1	.8	5	4.2	3	2.5	15	12.5
No problem at all	1	.8	-	-	-	-	-	-	-	-	1	.8
Total	25	20.8	17	14.2	23	19.2	28	23.3	27	22.5	120	100.0
Initiatives toward solution												
Seek assistance from librarian	7	5.9	13	10.9	7	5.9	10	8.4	16	13.4	53	44.5
Search bibliographical sources	2	1.7	-	-	4	3.4	5	4.2	4	3.4	15	12.6
Consult subject expert	5	4.2	7	5.9	8	6.7	8	6.7	6	5.0	34	28.6
Consult colleagues/friends	6	5.0	6	5.0	11	9.2	7	5.9	14	11.8	44	37.0
Internet	20	16.8	6	5.0	10	8.4	14	11.8	8	6.7	58	48.7
Go to another library	5	4.2	-	-	4	3.4	8	6.7	4	3.4	21	17.6
Purchase/Subscription	1	.8	-	-	2	1.7	3	2.5	1	.8	7	5.9
Total	24	20.2	17	14.3	23	19.3	28	23.5	27	22.7	119*	100.0

* 120 - 1 sysmiss = 119

Table 19d: Distribution constraints level and initiatives toward solution in: Locating suitable sources

Activities and Level of constraint	Researcher/ Scientist		Admin/ policy maker		Doctor		Teacher/ Instructor		Student/ Trainee		All	
	C	%	C	%	C	%	C	%	C	%	C	%
Constraint level												
Extreme problem	8	6.7	2	1.7	2	1.7	5	4.2	3	2.5	20	16.7
Considerable problem	11	9.2	1	.8	8	6.7	14	11.7	15	12.5	49	40.8
A little problem	2	1.7	10	8.3	5	4.2	7	5.8	8	6.7	32	26.7
No problem at all	4	3.3	4	3.3	8	6.7	2	1.7	1	.8	19	15.8
Total	25	20.8	17	14.2	23	19.2	28	23.3	27	22.5	120	100.0
Initiatives toward solution												
Seek assistance from librarian	9	8.9	10	9.9	8	7.9	10	9.9	12	11.9	49	48.5
Search bibliographical sources	11	10.9	4	4.0	8	7.9	9	8.9	11	10.9	43	42.6
Consult subject expert	6	5.9	3	3.0	3	3.0	4	4.0	2	2.0	18	17.8
Consult colleagues/friends	1	1.0	2	2.0	4	4.0	2	2.0	9	8.9	18	17.8
Internet	11	10.9	3	3.0	2	2.0	14	13.9	8	7.9	38	37.6
Go to another library	4	4.0	-	-	4	4.0	7	6.9	5	5.0	20	19.8
Purchase/Subscription	-	-	2	2.0	-	-	6	5.9	2	2.0	10	9.9
Total	21	20.8	13	12.9	15	14.9	26	25.7	26	25.7	101*	100.0

* 120 - 19 sysmiss = 101

Table 19e: Distribution constraints level and initiatives toward solution in: Understanding research reports and statistics

Activities and Level of constraint	Researcher/ Scientist		Admin/ policy maker		Doctor		Teacher/ Instructor		Student/ Trainee		All	
	C	%	C	%	C	%	C	%	C	%	C	%
Constraint level												
Extreme problem	-	-	-	-	-	-	1	.8	3	2.5	4	3.3
Considerable problem	2	1.7	-	-	5	4.2	2	1.7	12	10.0	21	17.5
A little problem	12	10.0	8	6.7	13	10.8	8	6.7	8	6.7	49	40.8
No problem at all	11	9.2	9	7.5	5	4.2	17	14.2	4	3.3	46	38.3
Total	25	20.8	17	14.2	23	19.2	28	23.3	27	22.5	120	100.0
Initiatives toward solution												
Seek assistance from librarian	1	1.4	1	1.4	3	4.1			6	8.1	11	14.9
consult subject expert	14	18.9	7	9.5	16	21.6	12	16.2	16	21.6	65	87.8
Consult colleagues	9	12.2	5	6.8	17	23.0	10	13.5	21	28.4	62	83.8
Go to another library	3	4.1	1	1.4							4	5.4
Total	14	18.9	8	10.8	18	24.3	11	14.9	23	31.1	74*	100.0

*120- 46 sysmis= 74

Table 19f: Distribution constraints level and initiatives toward solution in: Materials available in different languages

Activities and Level of constraint	Researcher/ Scientist		Admin/ policy maker		Doctor		Teacher/ Instructor		Student/ Trainee		All	
	C	%	C	%	C	%	C	%	C	%	C	%
Constraint level												
Extreme problem	5	4.2	-	-	-	-	3	2.5	3	2.5	11	9.2
Considerable problem	8	6.7	2	1.7	5	4.2	2	1.7	8	6.7	25	20.8
A little problem	8	6.7	7	5.8	15	12.5	8	6.7	12	10.0	50	41.7
No problem at all	4	3.3	8	6.7	3	2.5	15	12.5	4	3.3	34	28.3
Total	25	20.8	17	14.2	23	19.2	28	23.3	27	22.5	120	100.0
Initiatives toward solution												
Seek assistance from librarian	4	4.7	5	5.8	5	5.8	1	1.2	7	8.1	22	25.6
Search bibliographical sources	11	12.8	3	3.5	14	16.3	9	10.5	8	9.3	45	52.3
Consult colleagues friends	14	16.3	7	8.1	17	19.8	6	7.0	16	18.6	60	69.8
Internet	2	2.3	-	-	-	-	-	-	1	1.2	3	3.5
Go to another library	1	1.2	-	-	-	-	1	1.2	2	2.3	4	4.7
Purchase/subscription	5	5.8	1	1.2	-	-	4	4.7	4	4.7	14	16.3
Total	21	24.4	9	10.5	20	23.3	13	15.1	23	26.7	86	100.0

*120- 34 sysmis= 86

Table 19g: Distribution constraints level and initiatives toward solution in: Lack of proper guidance

Activities and Level of constraint	Researcher/ Scientist		Admin/ policy maker		Doctor		Teacher/ Instructor		Student/ Trainee		All	
	C	%	C	%	C	%	C	%	C	%	C	%
Constraint level												
Extreme problem	5	4.2	3	2.5	2	1.7	1	.8	2	1.7	13	10.8
Considerable problem	7	5.8	1	.8	3	2.5	9	7.5	8	6.7	28	23.3
A little problem	7	5.8	7	5.8	9	7.5	8	6.7	15	12.5	46	38.3
No problem at all	6	5.0	6	5.0	9	7.5	10	8.3	2	1.7	33	27.5
Total	25	20.8	17	14.2	23	19.2	28	23.3	27	22.5	120	100.0
Initiatives toward solution												
Seek assistance from librarian	10	11.5	9	10.3	7	8.0	7	8.0	13	14.9	46	52.9
Search bibliographical sources	1	1.1									1	1.1
Consult subject experts	5	5.7	4	4.6	6	6.9	10	11.5	11	12.6	36	41.4
Consult colleagues friends	10	11.5	5	5.7	9	10.3	12	13.8	11	12.6	47	54.0
Internet	6	6.9			1	1.1	1	1.1	4	4.6	12	13.8
Go to another library	4	4.6			1	1.1	3	3.4	3	3.4	11	12.6
Purchase/subscription	1	1.1									1	1.1
Total	19	21.8	11	12.6	14	16.1	18	20.7	25	28.7	87	100.0

* 120-33 sysmis= 87

Table 19h: Distribution constraints level and initiatives toward solution in: Library facilities not available at near by of their work place

Activities and Level of constraint	Researcher/ Scientist		Admin/ policy maker		Doctor		Teacher/ Instructor		Student/ Trainee		All	
	C	%	C	%	C	%	C	%	C	%	C	%
Constraint level												
Extreme problem	1	.8					2	1.7			3	2.5
Considerable problem	4	3.3					3	2.5	2	1.7	9	7.5
A little problem			8	6.7	4	3.3	7	5.8	11	9.2	30	25.0
No problem at all	20	16.7	9	7.5	19	15.8	16	13.3	14	11.7	78	65.0
Total	25	20.8	17	14.2	23	19.2	28	23.3	27	22.5	120	100.0
Initiatives toward solution												
Seek assistance from librarian	5	11.9	8	19.0	4	9.5	10	23.8	13	31.0	40	95.2
Search bibliographical sources							1	2.4			1	2.4
Search bibliographical sources									1	2.4	1	2.4
Consult colleagues friends					2	4.8	2	4.8	4	9.5	8	19.0
Go to another library			1	2.4			2	4.8	1	2.4	4	9.5
Total	5	11.9	8	19.0	4	9.5	12	28.6	13	31.0	42	100.0

* 120-78 sysmis= 42

Table 19i: Distribution constraints level and initiatives toward solution in: To know what type of library services are available and where?

Activities and Level of constraint	Researcher/ Scientist		Admin/ policy maker		Doctor		Teacher/ Instructor		Student/ Trainee		All	
	C	%	C	%	C	%	C	%	C	%	C	%
Constraint level												
Extreme problem	2	1.7	-	-	-	-	1	.8	3	2.5	6	5.0
Considerable problem	5	4.2	1	.8	6	5.0	5	4.2	8	6.7	25	20.8
A little problem	9	7.5	9	7.5	7	5.8	9	7.5	13	10.8	47	39.2
No problem at all	9	7.5	7	5.8	10	8.3	13	10.8	3	2.5	42	35.0
Total	25	20.8	17	14.2	23	19.2	28	23.3	27	22.5	120	100.0
Initiatives toward solution												
Seek assistance from librarian	9	11.5	8	10.3	11	14.1	11	14.1	16	20.5	55	70.5
Search bibliographical sources	4	5.1			2	2.6	4	5.1	5	6.4	15	19.2
Consult colleagues/friends	3	3.8	7	9.0	12	15.4	11	14.1	21	26.9	54	69.2
Internet	7	9.0	2	2.6			3	3.8			12	15.4
Go to another library	8	10.3	2	2.6	1	1.3	1	1.3	2	2.6	14	17.9
Total	16	20.5	10	12.8	13	16.7	15	19.2	24	30.8	78	100.0

* 120-42 sysmis= 78

Table 20: Purpose of visit to the library by category of institution

Mode of service delivery	Health		Population		Nutrition		HPN		All	
	C	%	C	%	C	%	C	%	C	%
To borrow books/periodicals	12	10.0	30	25.0	7	5.8	1	.8	50	41.7
To browse library collection	18	15.0	32	26.7	15	12.5	17	14.2	82	68.3
To locate particular source(s)	18	15.0	15	12.5	10	8.3	7	5.8	50	41.7
To consult reference sources/tools	23	19.2	32	26.7	11	9.2	16	13.3	82	68.3
To avail their reference and referral services	16	13.3	12	10.0	4	3.3	6	5.0	38	31.7
To read newspapers	6	5.0	22	18.3	3	2.5	4	3.3	35	29.2
To search CD-ROM literature	6	5.0	1	.8	1	.8	9	7.5	17	14.2
To browse internet_ search web resources	12	10.0					10	8.3	22	18.3
Total	30	25.0	50	41.7	20	16.7	20	16.7	120	100.0

Table 21a: Distribution of frequency of use and resource availability by category of institution: Books and monographs

Frequency & Status	Health		Population		Nutrition		HPN		All	
	N		N		N		N		N	
Frequency of use										
Most frequently used	24	20.0	30	25.0	11	9.2	14	11.7	79	65.8
Frequently used	5	4.2	13	10.8	4	3.3	6	5.0	28	23.3
Rarely used	1	.8	7	5.8	5	4.2			13	10.8
Total	30	25.0	50	41.7	20	16.7	20	16.7	120	100.0
Availability in the library										
Adequate	6	5.0	3	2.5			7	5.8	16	13.3
Fairly adequate	16	13.3	17	14.2	5	4.2	13	10.8	51	42.5
Inadequate	8	6.7	30	25.0	15	12.5			53	44.2
Total	30	25.0	50	41.7	20	16.7	20	16.7	120	100.0

Table 21b: Distribution of frequency of use and resource availability by category of institution: Reference and Information

Sources of information	Health		Population		Nutrition		HPN		All	
	N	%	N	%	N	%	N	%	N	%
Frequency of use										
Most frequently used	7	5.8	9	7.5	12	10.0	10	8.3	38	31.7
Frequently used	18	15.0	31	25.8	5	4.2	10	8.3	64	53.3
Rarely used	5	4.2	9	7.5	2	1.7			16	13.3
Not used			1	.8	1	.8			2	1.7
Total	30	25.0	50	41.7	20	16.7	20	16.7	120	100.0
Availability in the library										
Adequate	2	1.7					7	5.8	9	7.5
Fairly adequate	20	16.7	10	8.3	3	2.5	12	10.0	45	37.5
Inadequate	8	6.7	40	33.3	7	5.8	1	.8	56	46.7
Not available					10	8.3			10	8.3
Total	30	25.0	50	41.7	20	16.7	20	16.7	120	100.0

Table 21c: Distribution of frequency of use and resource availability by category of institution: Recent periodical articles

Sources of information	Health		Population		Nutrition		HPN		All	
	N	%	N	%	N	%	N	%	N	%
Frequency of use										
Most frequently used	12	10.0	17	14.2	11	9.2	11	9.2	51	42.5
Frequently used	12	10.0	22	18.3	5	4.2	9	7.5	48	40.0
Rarely used	6	5.0	11	9.2	4	3.3			21	17.5
Total	30	25.0	50	41.7	20	16.7	20	16.7	120	100.0
Availability in the library										
Adequate	2	1.7					8	6.7	10	8.3
Fairly adequate	12	10.0	3	2.5			8	6.7	23	19.2
Inadequate	16	13.3	47	39.2	16	13.3	4	3.3	83	69.2
Not available					4	3.3			4	3.3
Total	30	25.0	50	41.7	20	16.7	20	16.7	120	100.0

Table 21d: Distribution of frequency of use and resource availability by category of institution: Back issue of periodicals

Sources of information	Health		Population		Nutrition		HPN		All	
	N	%	N	%	N	%	N	%	N	%
Frequency of use										
Most frequently used	2	1.7	7	5.8	7	5.8			16	13.3
Frequently used	19	15.8	22	18.3	7	5.8	17	14.2	65	54.2
Rarely used	8	6.7	19	15.8	6	5.0	3	2.5	36	30.0
Not used	1	.8	2	1.7					3	2.5
Total	30	25.0	50	41.7	20	16.7	20	16.7	120	100.0
Availability in the library										
Adequate	1	.8					2	1.7	3	2.5
Fairly adequate	16	13.3	3	2.5			15	12.5	34	28.3
Inadequate	13	10.8	46	38.3	15	12.5	3	2.5	77	64.2
Not available					5	4.2			5	4.2
Don't know			1	.8					1	.8
Total	30	25.0	50	41.7	20	16.7	20	16.7	120	100.0

Table 21e: Distribution of frequency of use and resource availability by category of institution: Technical reports

Sources of information	Health		Population		Nutrition		HPN		All	
	N	%	N	%	N	%	N	%	N	%
Frequency of use										
Most frequently used	4	3.3	13	10.8	3	2.5	2	1.7	22	18.3
Frequently used	11	9.2	18	15.0	9	7.5	11	9.2	49	40.8
Rarely used	8	6.7	17	14.2	5	4.2	7	5.8	37	30.8
Not used	6	5.0	2	1.7	3	2.5			11	9.2
Unknown source	1	.8							1	.8
Total	30	25.0	50	41.7	20	16.7	20	16.7	120	100.0
Availability in the library										
Adequate			3	2.5			7	5.8	10	8.3
Fairly adequate	10	8.3	23	19.2	6	5.0	9	7.5	48	40.0
Inadequate	14	11.7	21	17.5	5	4.2	4	3.3	44	36.7
Not available					6	5.0			6	5.0
Don't know	6	5.0	3	2.5	3	2.5			12	10.0
Total	30	25.0	50	41.7	20	16.7	20	16.7	120	100.0

Table 21f: Distribution of frequency of use and resource availability by category of institution: Discussion with fellow/ colleagues

Sources of information	Health		Population		Nutrition		HPN		All	
	N	%	N	%	N	%	N	%	N	%
Frequency of use										
Most frequently used			2	1.7					2	1.7
Frequently used	5	4.2	13	10.8	5	4.2			23	19.2
Rarely used	17	14.2	16	13.3	3	2.5	6	5.0	42	35.0
Not used	7	5.8	19	15.8	12	10.0	14	11.7	52	43.3
Unknown source	1	.8							1	.8
Total	30	25.0	50	41.7	20	16.7	20	16.7	120	100.0
Availability in the library										
Adequate	5	4.2	5	4.2	2	1.7	1	.8	13	10.8
Fairly adequate	16	13.3	19	15.8	5	4.2	4	3.3	44	36.7
Inadequate	7	5.8	8	6.7	1	.8	1	.8	17	14.2
Not available			2	1.7			3	2.5	5	4.2
Don't know	2	1.7	16	13.3	12	10.0	11	9.2	41	34.2
Total	30	25.0	50	41.7	20	16.7	20	16.7	120	100.0

Table 21g: Distribution of frequency of use and resource availability by category of institution: Manuscripts

Sources of information	Health		Population		Nutrition		HPN		All	
	N	%	N	%	N	%	N	%	N	%
Frequency of use										
Frequently used					2	1.7			2	1.7
Rarely used	1	.8	4	3.3	2	1.7	1	.8	8	6.7
Not used	28	23.3	36	30.0	14	11.7	19	15.8	97	80.8
Unknown source	1	.8	10	8.3	2	1.7			13	10.8
Total	30	25.0	50	41.7	20	16.7	20	16.7	120	100.0
Availability in the library										
Not available	2	1.7	21	17.5	9	7.5	4	3.3	36	30.0
Don't know	28	23.3	29	24.2	11	9.2	16	13.3	84	70.0
Total	30	25.0	50	41.7	20	16.7	20	16.7	120	100.0

Table 21h: Distribution of frequency of use and resource availability by category of institution: Newspapers/newspaper clippings

Sources of information	Health		Population		Nutrition		HPN		All	
	N	%	N	%	N	%	N	%	N	%
Frequency of use										
Most frequently used			17	14.2	8	6.7			25	20.8
Frequently used	12	10.0	15	12.5	8	6.7	4	3.3	39	32.5
Rarely used	14	11.7	12	10.0	3	2.5	5	4.2	34	28.3
Not used	4	3.3	6	5.0	1	.8	11	9.2	22	18.3
Total	30	25.0	50	41.7	20	16.7	20	16.7	120	100.0
Availability in the library										
Adequate	1	.8	16	13.3	3	2.5			20	16.7
Fairly adequate	13	10.8	18	15.0	7	5.8	3	2.5	41	34.2
Inadequate	16	13.3	9	7.5	5	4.2	3	2.5	33	27.5
Not available			6	5.0			3	2.5	9	7.5
Don't know			1	.8	5	4.2	11	9.2	17	14.2
Total	30	25.0	50	41.7	20	16.7	20	16.7	120	100.0

Table 21i: Distribution of frequency of use and resource availability by category of institution: Conference/seminar workshop proceedings

Sources of information	Health		Population		Nutrition		HPN		All	
	N	%	N	%	N	%	N	%	N	%
Frequency of use										
Most frequently used	Qw12		3	2.5	2	1.7			5	4.2
Frequently used	11	9.2	10	8.3	8	6.7	10	8.3	39	32.5
Rarely used	13	10.8	17	14.2	6	5.0	8	6.7	44	36.7
Not used	5	4.2	18	15.0	4	3.3	2	1.7	29	24.2
Unknown source	1	.8	2	1.7					3	2.5
Total	30	25.0	50	41.7	20	16.7	20	16.7	120	100.0
Availability in the library										
Adequate			3	2.5					3	2.5
Fairly adequate	8	6.7	1	.8	1	.8	8	6.7	18	15.0
Inadequate	16	13.3	26	21.7	9	7.5	10	8.3	61	50.8
Not available			3	2.5	7	5.8	1	.8	11	9.2
Don't know	6	5.0	17	14.2	3	2.5	1	.8	27	22.5
Total	30	25.0	50	41.7	20	16.7	20	16.7	120	100.0

Table 21j: Distribution of frequency of use and resource availability by category of institution: Thesis/dissertations

Sources of information	Health		Population		Nutrition		HPN		All	
	N	%	N	%	N	%	N	%	N	%
Frequency of use										
Most frequently used	4	3.3	6	5.0	1	.8	1	.8	12	10.0
Frequently used	18	15.0	17	14.2	8	6.7	10	8.3	53	44.2
Rarely used	5	4.2	11	9.2	3	2.5	7	5.8	26	21.7
Not used	3	2.5	16	13.3	8	6.7	1	.8	28	23.3
Unknown source							1	.8	1	.8
Total	30	25.0	50	41.7	20	16.7	20	16.7	120	100.0
Availability in the library										
Adequate	2	1.7							2	1.7
Fairly adequate	9	7.5	1	.8	1	.8	8	6.7	19	15.8
Inadequate	17	14.2	33	27.5	4	3.3	8	6.7	62	51.7
Not available	1	.8	3	2.5	10	8.3	3	2.5	17	14.2
Don't know	1	.8	13	10.8	5	4.2	1	.8	20	16.7
Total	30	25.0	50	41.7	20	16.7	20	16.7	120	100.0

Table 21k: Distribution of frequency of use and resource availfability by category of institution: Patents & standards

Sources of information	Health		Population		Nutrition		HPN		All	
	N	%	N	%	N	%	N	%	N	%
Frequency of use										
Frequently used	3	2.5	2	1.7	2	1.7	2	1.7	9	7.5
Rarely used	5	4.2	1	.8	3	2.5	2	1.7	11	9.2
Not used	18	15.0	27	22.5	13	10.8	15	12.5	73	60.8
Unknown source	4	3.3	20	16.7	2	1.7	1	.8	27	22.5
Total	30	25.0	50	41.7	20	16.7	20	16.7	120	100.0
Availability in the library										
Fairly adequate							2	1.7	2	1.7
Inadequate							4	3.3	4	3.3
Not available	11	9.2	9	7.5	5	4.2	12	10.0	37	30.8
Don't know	19	15.8	41	34.2	15	12.5	2	1.7	77	64.2
Total	30	25.0	50	41.7	20	16.7	20	16.7	120	100.0

Table 21l: Distribution of frequency of use and resource availability by category of institution: Research reports

Sources of information	Health		Population		Nutrition		HPN		All	
	N	%	N	%	N	%	N	%	N	%
Frequency of use										
Most frequently used	7	5.8							7	5.8
Frequently used	14	11.7	12	10.0	6	5.0	2	1.7	34	28.3
Rarely used	3	2.5	27	22.5	10	8.3	2	1.7	42	35.0
Not used	5	4.2	11	9.2	4	3.3	8	6.7	28	23.3
Unknown source	1	.8					8	6.7	9	7.5
Total	30	25.0	50	41.7	20	16.7	20	16.7	120	100.0
Availability in the library										
Adequate							1	.8	1	.8
Fairly adequate	3	2.5	4	3.3			11	9.2	18	15.0
Inadequate	23	19.2	34	28.3	8	6.7	5	4.2	70	58.3
Not available	1	.8	1	.8	9	7.5	2	1.7	13	10.8
Don't know	3	2.5	11	9.2	3	2.5	1	.8	18	15.0
Total	30	25.0	50	41.7	20	16.7	20	16.7	120	100.0

Table 21m: Distribution of frequency of use and resource availability by category of institution: Maps

Sources of information	Health		Population		Nutrition		HPN		All	
	N	%	N	%	N	%	N	%	N	%
Frequency of use										
Frequently used			8	6.7	1	.8	10	8.3	19	15.8
Rarely used	9	7.5	4	3.3	5	4.2	5	4.2	23	19.2
Not used	21	17.5	36	30.0	12	10.0	4	3.3	73	60.8
Unknown source			2	1.7	2	1.7	1	.8	5	4.2
Total	30	25.0	50	41.7	20	16.7	20	16.7	120	100.0
Availability in the library										
Fairly adequate	1	.8	3	2.5			1	.8	5	4.2
Inadequate	3	2.5	7	5.8	2	1.7	8	6.7	20	16.7
Not available	7	5.8	3	2.5	10	8.3	7	5.8	27	22.5
Don't know	19	15.8	37	30.8	8	6.7	4	3.3	68	56.7
Total	30	25.0	50	41.7	20	16.7	20	16.7	120	100.0

Table 21n: Distribution of frequency of use and resource availability by category of institution: Indexing and abstracting

Sources of information	Health		Population		Nutrition		HPN		All	
	N	%	N	%	N	%	N	%	N	%
Frequency of use										
Most frequently used			2	1.7	3	2.5			5	4.2
Frequently used	2	1.7	4	3.3	8	6.7	4	3.3	18	15.0
Rarely used	14	11.7	5	4.2	2	1.7	8	6.7	29	24.2
Not used	10	8.3	21	17.5	5	4.2	1	.8	37	30.8
Unknown source	4	3.3	18	15.0	2	1.7	7	5.8	31	25.8
Total	30	25.0	50	41.7	20	16.7	20	16.7	120	100.0
Availability in the library										
Fairly adequate	3	2.5					7	5.8	10	8.3
Inadequate	8	6.7					9	7.5	17	14.2
Not available	8	6.7	12	10.0	15	12.5	3	2.5	38	31.7
Don't know	11	9.2	38	31.7	5	4.2	1	.8	55	45.8
Total	30	25.0	50	41.7	20	16.7	20	16.7	120	100.0

Table 21o: Distribution of frequency of use and resource availability by category of institution: Bibliographies

Sources of information	Health		Population		Nutrition		HPN		All	
	N	%	N	%	N	%	N	%	N	%
Frequency of use										
Most frequently used	2	1.7	2	1.7	3	2.5	1	.8	8	6.7
Frequently used	9	7.5	13	10.8	9	7.5	3	2.5	34	28.3
Rarely used	10	8.3	10	8.3	1	.8	8	6.7	29	24.2
Not used	8	6.7	19	15.8	5	4.2	6	5.0	38	31.7
Unknown source	1	.8	6	5.0	2	1.7	2	1.7	11	9.2
Total	30	25.0	50	41.7	20	16.7	20	16.7	120	100.0
Availability in the library										
Fairly adequate	4	3.3	1	.8			12	10.0	17	14.2
Inadequate	17	14.2	15	12.5	2	1.7	5	4.2	39	32.5
Not available	1	.8	10	8.3	15	12.5	2	1.7	28	23.3
Don't know	8	6.7	24	20.0	3	2.5	1	.8	36	30.0
Total	30	25.0	50	41.7	20	16.7	20	16.7	120	100.0

Table 21p: Distribution of frequency of use and resource availability by category of institution: New clippings

Sources of information	Health		Population		Nutrition		HPN		All	
	N	%	N	%	N	%	N	%	N	%
Frequency of use										
Most frequently used			3	2.5					3	2.5
Frequently used	6	5.0	8	6.7	5	4.2	7	5.8	26	21.7
Rarely used	10	8.3	4	3.3	5	4.2	11	9.2	30	25.0
Not used	14	11.7	27	22.5	8	6.7	1	.8	50	41.7
Unknown source			8	6.7	2	1.7	1	.8	11	9.2
Total	30	25.0	50	41.7	20	16.7	20	16.7	120	100.0
Availability in the library										
Fairly adequate	5	4.2					2	1.7	7	5.8
Inadequate	6	5.0					9	7.5	15	12.5
Not available	6	5.0	23	19.2	17	14.2	8	6.7	54	45.0
Don't know	13	10.8	27	22.5	3	2.5	1	.8	44	36.7
Total	30	25.0	50	41.7	20	16.7	20	16.7	120	100.0

Table 21q: Distribution of frequency of use and resource availability by category of institution: Film/slide

Sources of information	Health		Population		Nutrition		HPN		All	
	N	%	N	%	N	%	N	%	N	%
Frequency of use										
Frequently used			1	.8					1	.8
Rarely used	6	5.0	1	.8	1	.8			8	6.7
Not used	21	17.5	39	32.5	18	15.0	13	10.8	91	75.8
Unknown source	3	2.5	9	7.5	1	.8	7	5.8	20	16.7
Total	30	25.0	50	41.7	20	16.7	20	16.7	120	100.0
Availability in the library										
Not available	9	7.5	9	7.5	2	1.7	16	13.3	36	30.0
Don't know	21	17.5	41	34.2	18	15.0	4	3.3	84	70.0
Total	30	25.0	50	41.7	20	16.7	20	16.7	120	100.0

Table 21r: Distribution of frequency of use and resource availability by category of institution: Government publications

Sources of information	Health		Population		Nutrition		HPN		All	
	N	%	N	%	N	%	N	%	N	%
Frequency of use										
Most frequently used			4	3.3	2	1.7			6	5.0
Frequently used	6	5.0	22	18.3	12	10.0	2	1.7	42	35.0
Rarely used	15	12.5	19	15.8	5	4.2	2	1.7	41	34.2
Not used	9	7.5	5	4.2	1	.8	1	.8	16	13.3
Unknown source							15	12.5	15	12.5
Total	30	25.0	50	41.7	20	16.7	20	16.7	120	100.0
Availability in the library										
Adequate			9	7.5	1	.8			10	8.3
Fairly adequate	3	2.5	10	8.3	5	4.2	7	5.8	25	20.8
Inadequate	19	15.8	30	25.0	14	11.7	12	10.0	75	62.5
Not available	2	1.7	1	.8					3	2.5
Don't know	6	5.0					1	.8	7	5.8
Total	30	25.0	50	41.7	20	16.7	20	16.7	120	100.0

Table 21s: Distribution of frequency of use and resource availability by category of institution: Primary data collected through survey

Sources of information	Health		Population		Nutrition		HPN		All	
	N	%	N	%	N	%	N	%	N	%
Frequency of use										
Frequently used			1	.8	2	1.7	14	11.7	17	14.2
Rarely used	5	4.2	4	3.3	2	1.7	1	.8	12	10.0
Not used	22	18.3	30	25.0	11	9.2	5	4.2	68	56.7
Unknown source	3	2.5	15	12.5	5	4.2			23	19.2
Total	30	25.0	50	41.7	20	16.7	20	16.7	120	100.0
Availability in the library										
Adequate							1	.8	1	.8
Fairly adequate							1	.8	1	.8
Inadequate			1	.8			4	3.3	5	4.2
Not available	8	6.7	10	8.3	6	5.0	9	7.5	33	27.5
Don't know	22	18.3	39	32.5	14	11.7	5	4.2	80	66.7
Total	30	25.0	50	41.7	20	16.7	20	16.7	120	100.0

Table 21t: Distribution of frequency of use and resource availability by category of institution: Commercial databases/information brokers

Sources of information	Health		Population		Nutrition		HPN		All	
	N	%	N	%	N	%	N	%	N	%
Frequency of use										
Rarely used			1	.8					1	.8
Not used	19	15.8	33	27.5	17	14.2	20	16.7	89	74.2
Unknown source	11	9.2	16	13.3	3	2.5			30	25.0
Total	30	25.0	50	41.7	20	16.7	20	16.7	120	100.0
Availability in the library										
Not available			8	6.7	1	.8	3	2.5	12	10.0
Don't know	30	25.0	42	35.0	19	15.8	17	14.2	108	90.0
Total	30	25.0	50	41.7	20	16.7	20	16.7	120	100.0

Table 22a: Distribution of priority and availability of expected services by type of libraries: Borrowing privileges/Loan services

Priority	Health		Population		Nutrition		HPN		All	
	C	%	C	%	C	%	C	%	C	%
Service priority										
Top priority	27	22.5	50	41.7	20	16.7	16	13.3	113	94.2
Middle priority	3	2.5					4	3.3	7	5.8
Total	30	25.0	50	41.7	20	16.7	20	16.7	120	100.0
Availability										
Adequate	2	1.7	15	12.5	3	2.5	1	.8	21	17.5
Fairly adequate	6	5.0	13	10.8	4	3.3			23	19.2
Inadequate	7	5.8	4	3.3	2	1.7	2	1.7	15	12.5
Not available	15	12.5	18	15.0	11	9.2	17	14.2	61	50.8
Total	30	25.0	50	41.7	20	16.7	20	16.7	120	100.0

Table 22b: Distribution of priority and availability of expected services by type of libraries: Reference and Information Services

Priority	Health		Population		Nutrition		HPN		All	
	C	%	C	%	C	%	C	%	C	%
Service priority										
Top priority	11	9.2	18	15.0	13	10.8	7	5.8	49	40.8
Middle priority	14	11.7	17	14.2	4	3.3	12	10.0	47	39.2
Low priority	5	4.2	11	9.2	1	.8	1	.8	18	15.0
Not using at all			3	2.5	1	.8			4	3.3
Unknown/Not informed			1	.8	1	.8			2	1.7
Total	30	25.0	50	41.7	20	16.7	20	16.7	120	100.0
Availability										
Adequate	2	1.7					3	2.5	5	4.2
Fairly adequate	19	15.8	16	13.3	4	3.3	15	12.5	54	45.0
Inadequate	9	7.5	29	24.2	6	5.0	2	1.7	46	38.3
Not available			1	.8	8	6.7			9	7.5
Don't know			4	3.3	2	1.7			6	5.0
Total	30	25.0	50	41.7	20	16.7	20	16.7	120	100.0

Table 22c: Distribution of priority and availability of expected services by type of libraries: Referral services

Priority	Health		Population		Nutrition		HPN		All	
	C	%	C	%	C	%	C	%	C	%
Service priority										
Top priority			3	2.5	4	3.3			7	5.8
Middle priority	7	5.8	15	12.5	7	5.8	2	1.7	31	25.8
Low priority	9	7.5	6	5.0	5	4.2	1	.8	21	17.5
Not using at all	11	9.2	4	3.3	2	1.7	10	8.3	27	22.5
Unknown/Not informed	3	2.5	22	18.3	2	1.7	7	5.8	34	28.3
Total	30	25.0	50	41.7	20	16.7	20	16.7	120	100.0
Availability										
Adequate	1	.8							1	.8
Fairly adequate	6	5.0			3	2.5			9	7.5
Inadequate	6	5.0	16	13.3	13	10.8	2	1.7	37	30.8
Not available	8	6.7	8	6.7			8	6.7	24	20.0
Don't know	9	7.5	26	21.7	4	3.3	10	8.3	49	40.8
Total	30	25.0	50	41.7	20	16.7	20	16.7	120	100.0

Table 22d: Distribution of priority and availability of expected services by type of libraries: Display of current arrivals

Priority	Health		Population		Nutrition		HPN		All	
	C	%	C	%	C	%	C	%	C	%
Service priority										
Top priority	13	10.8	17	14.2	8	6.7	6	5.0	44	36.7
Middle priority	14	11.7	29	24.2	10	8.3	10	8.3	63	52.5
Low priority	3	2.5	4	3.3	2	1.7	3	2.5	12	10.0
Not using at all							1	.8	1	.8
Total	30	25.0	50	41.7	20	16.7	20	16.7	120	100.0
Availability										
Adequate	3	2.5					1	.8	4	3.3
Fairly adequate	13	10.8	10	8.3	3	2.5	17	14.2	43	35.8
Inadequate	14	11.7	37	30.8	7	5.8	1	.8	59	49.2
Not available			3	2.5	9	7.5			12	10.0
Don't know					1	.8	1	.8	2	1.7
Total	30	25.0	50	41.7	20	16.7	20	16.7	120	100.0

Table 22e: Distribution of priority and availability of expected services by type of libraries: Inter-library loan service

Priority	Health		Population		Nutrition		HPN		All	
	C	%	C	%	C	%	C	%	C	%
Service priority										
Top priority	1	.8	4	3.3	7	5.8			12	10.0
Middle priority	2	1.7	14	11.7	6	5.0			22	18.3
Low priority	6	5.0	6	5.0	4	3.3	2	1.7	18	15.0
Not using at all	16	13.3	9	7.5	2	1.7	16	13.3	43	35.8
Unknown/Not informed	5	4.2	17	14.2	1	.8	2	1.7	25	20.8
Total	30	25.0	50	41.7	20	16.7	20	16.7	120	100.0
Availability										
Fairly adequate	2	1.7							2	1.7
Inadequate	1	.8					2	1.7	3	2.5
Not available	7	5.8	31	25.8	17	14.2	1	.8	56	46.7
Don't know	20	16.7	19	15.8	3	2.5	17	14.2	59	49.2
Total	30	25.0	50	41.7	20	16.7	20	16.7	120	100.0

Table 22f: Distribution of priority and availability of expected services by type of libraries: News Clippings

Priority	Health		Population		Nutrition		HPN		All	
	C	%	C	%	C	%	C	%	C	%
Service priority										
Top priority	2	1.7	15	12.5	5	4.2			22	18.3
Middle priority	11	9.2	21	17.5	8	6.7	1	.8	41	34.2
Low priority	10	8.3	7	5.8	5	4.2	4	3.3	26	21.7
Not using at all	7	5.8	4	3.3			15	12.5	26	21.7
Unknown/Not informed			3	2.5	2	1.7			5	4.2
Total	30	25.0	50	41.7	20	16.7	20	16.7	120	100.0
Availability										
Adequate	1	.8							1	.8
Fairly adequate	4	3.3	10	8.3	4	3.3	1	.8	19	15.8
Inadequate	9	7.5	5	4.2	1	.8	3	2.5	18	15.0
Not available	9	7.5	32	26.7	15	12.5	1	.8	57	47.5
Don't know	7	5.8	3	2.5			15	12.5	25	20.8
Total	30	25.0	50	41.7	20	16.7	20	16.7	120	100.0

Table 22g: Distribution of priority and availability of expected services by type of libraries: Current content service

Priority	Health		Population		Nutrition		HPN		All	
	C	%	C	%	C	%	C	%	C	%
Service priority										
Top priority	4	3.3	11	9.2	7	5.8	8	6.7	30	25.0
Middle priority	7	5.8	30	25.0	4	3.3	8	6.7	49	40.8
Low priority	6	5.0	4	3.3	2	1.7	2	1.7	14	11.7
Not using at all	9	7.5	3	2.5	4	3.3	2	1.7	18	15.0
Unknown/Not informed	4	3.3	2	1.7	3	2.5			9	7.5
Total	30	25.0	50	41.7	20	16.7	20	16.7	120	100.0
Availability										
Adequate							12	10.0	12	10.0
Fairly adequate	1	.8	2	1.7			3	2.5	6	5.0
Inadequate	8	6.7	15	12.5			3	2.5	26	21.7
Not available	9	7.5	30	25.0	13	10.8			52	43.3
Don't know	12	10.0	3	2.5	7	5.8	2	1.7	24	20.0
Total	30	25.0	50	41.7	20	16.7	20	16.7	120	100.0

Table 22h: Distribution of priority and availability of expected services by type of libraries: SDI service

Priority	Health		Population		Nutrition		HPN		All	
	C	%	C	%	C	%	C	%	C	%
Service priority										
Top priority	3	2.5	4	3.3	7	5.8	10	8.3	24	20.0
Middle priority	2	1.7	4	3.3	5	4.2	6	5.0	17	14.2
Low priority	4	3.3					4	3.3	8	6.7
Not using at all	6	5.0	12	10.0	6	5.0			24	20.0
Unknown/Not informed	15	12.5	30	25.0	2	1.7			47	39.2
Total	30	25.0	50	41.7	20	16.7	20	16.7	120	100.0
Availability										
Adequate							1	.8	1	.8
Fairly adequate	1	.8					11	9.2	12	10.0
Inadequate							7	5.8	7	5.8
Not available	13	10.8	18	15.0	13	10.8	2	1.7	46	38.3
Don't know	15	12.5	32	26.7	7	5.8			54	45.0
Total	30	25.0	50	41.7	20	16.7	20	16.7	120	100.0

Table 22i: Distribution of priority and availability of expected services by type of libraries: Translation service

Priority	Health		Population		Nutrition		HPN		All	
	C	%	C	%	C	%	C	%	C	%
Service priority										
Top priority			1	.8					1	.8
Middle priority	2	1.7	2	1.7	3	2.5			7	5.8
Low priority	4	3.3	5	4.2	5	4.2			14	11.7
Not using at all	17	14.2	10	8.3	8	6.7	20	16.7	55	45.8
Unknown/Not informed	7	5.8	32	26.7	4	3.3			43	35.8
Total	30	25.0	50	41.7	20	16.7	20	16.7	120	100.0
Availability										
Not available	10	8.3	23	19.2	10	8.3	4	3.3	47	39.2
Dont know	20	16.7	27	22.5	10	8.3	16	13.3	73	60.8
Total	30	25.0	50	41.7	20	16.7	20	16.7	120	100.0

Table 22j: Distribution of priority and availability of expected services by type of libraries: Bibliographical services

Priority	Health		Population		Nutrition		HPN		All	
	C	%	C	%	C	%	C	%	C	%
Service priority										
Top priority	4	3.3	11	9.2	8	6.7			23	19.2
Middle priority	10	8.3	24	20.0	9	7.5	9	7.5	52	43.3
Low priority	11	9.2	13	10.8	1	.8	10	8.3	35	29.2
Not using at all	4	3.3	1	.8	1	.8	1	.8	7	5.8
Unknown/Not informed	1	.8	1	.8	1	.8			3	2.5
Total	30	25.0	50	41.7	20	16.7	20	16.7	120	100.0
Availability										
Fairly adequate	6	5.0	3	2.5			10	8.3	19	15.8
Inadequate	21	17.5	34	28.3	8	6.7	9	7.5	72	60.0
Not available			11	9.2	10	8.3			21	17.5
Don't know	3	2.5	2	1.7	2	1.7	1	.8	8	6.7
Total	30	25.0	50	41.7	20	16.7	20	16.7	120	100.0

Table 22k: Distribution of priority and availability of expected services by type of libraries: Online services

Priority	Health		Population		Nutrition		HPN		All	
	C	%	C	%	C	%	C	%	C	%
Service priority										
Top priority	17	14.2	39	32.5	19	15.8	13	10.8	88	73.3
Middle priority	13	10.8	11	9.2	1	.8	3	2.5	28	23.3
Low priority							2	1.7	2	1.7
Not using at all							2	1.7	2	1.7
Total	30	25.0	50	41.7	20	16.7	20	16.7	120	100.0
Availability										
Adequate	1	.8	1	.8			15	12.5	17	14.2
Fairly adequate	11	9.2					2	1.7	13	10.8
Inadequate	18	15.0	7	5.8	1	.8	2	1.7	28	23.3
Not available			42	35.0	19	15.8			61	50.8
Don't know							1	.8	1	.8
Total	30	25.0	50	41.7	20	16.7	20	16.7	120	100.0

Table 22l: Distribution of priority and availability of expected services by type of libraries: Reprographic services

Priority	Health		Population		Nutrition		HPN		All	
	C	%	C	%	C	%	C	%	C	%
Service priority										
Top priority	26	21.7	44	36.7	19	15.8	11	9.2	100	83.3
Middle priority	4	3.3	6	5.0	1	.8	8	6.7	19	15.8
Low priority							1	.8	1	8
Total	30	25.0	50	41.7	20	16.7	20	16.7	120	100.0
Availability										
Adequate	3	2.5	16	13.3	5	4.2	19	15.8	43	35.8
Fairly adequate	23	19.2	12	10.0	3	2.5	1	.8	39	32.5
Inadequate	4	3.3	7	5.8	2	1.7			13	10.8
Not available			15	12.5	10	6.3			25	20.8
Total	30	25.0	50	41.7	20	16.7	20	16.7	120	100.0

Table 23: Distribution of the user's opinion on the timeliness of information by category of institution

Degree of timeliness	Health		Population		Nutrition		HPN		All	
	C	%	C	%	C	%	C	%	C	%
Most up to date	1	.8	-	-	-	-	1	.8	2	1.7
Fairly up to date	14	11.7	4	3.3	1	.8	15	12.5	34	28.3
Rarely up to date	12	10.0	17	14.2	2	1.7	4	3.3	35	29.2
Not up to date	3	2.5	29	24.2	17	14.2	-	-	49	40.8
Total	30	25.0	50	41.7	20	16.7	20	16.7	120	100.0

Table 24: Distribution of the level of limitation of the sample library encountered by the concerned users

Constraint level	Health		Population		Nutrition		HPN		All	
	C	%	C	%	C	%	C	%	C	%
inadequate information resources										
Extreme difficult	9	7.5	43	35.8	16	13.3	-	-	68	56.7
Considerable problem	12	10.0	3	2.5	3	2.5	3	2.5	21	17.5
A little problem	9	7.5	4	3.3	1	.8	14	11.7	28	23.3
No problem at all	-	-	-	-	-	-	3	2.5	3	2.5
Total	30	25.0	50	41.7	20	16.7	20	16.7	120	100.0
Reference service/ referral service										
Extreme Problem	3	2.5	15	12.5	13	10.8	1	.8	32	26.7
Considerable problem	8	6.7	31	25.8	6	5.0	12	10.0	57	47.5
A little problem	15	12.5	4	3.3	1	.8	5	4.2	25	20.8
No problem at all	4	3.3	-	-	-	-	2	1.7	6	5.0
Total	30	25.0	50	41.7	20	16.7	20	16.7	120	100.0
Poor organization of materials										
Extreme difficult	-	-	13	10.8	8	6.7	-	-	21	17.5
Considerable problem	5	4.2	20	16.7	10	8.3	-	-	35	29.2
A little problem	11	9.2	13	10.8	2	1.7	16	13.3	42	35.0
No problem at all	14	11.7	4	3.3	-	-	4	3.3	22	18.3
Total	30	25.0	50	41.7	20	16.7	20	16.7	120	100.0

Table 24 contd.: Distribution of the level of limitation of the sample library encountered by the concerned users

Constraint level	Health		Population		Nutrition		HPN		All	
	C	%	C	%	C	%	C	%	C	%
Lake of automated facilities										
Extreme difficult	19	15.8	50	41.7	20	16.7	2	1.7	91	75.8
Considerable problem	4	3.3	-	-	-	-	3	2.5	7	5.8
A little problem	6	5.0	-	-	-	-	-	-	6	5.0
No problem at all	1	.8	-	-	-	-	15	12.5	16	13.3
Total	30	25.0	50	41.7	20	16.7	20	16.7	120	100.0
In comfortable reading environment										
Extreme difficult	-	-	4	3.3	2	1.7	-	-	6	5.0
Considerable problem	10	8.3	34	28.3	12	10.0	-	-	56	46.7
A little problem	17	14.2	12	10.0	6	5.0	1	.8	36	30.0
No problem at all	3	2.5	-	-	-	-	19	15.8	22	18.3
Total	30	25.0	50	41.7	20	16.7	20	16.7	120	100.0

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Appendix 3a
DCI- Library and Information Centers

PhD Research on
Information Systems for Health and Population Sector in Bangladesh Evolution, Structure, Gaps and Need-based Design

QUESTIONNAIRE
for
Situation analysis of libraries and information centers
in
Health and population sector in Bangladesh

SECTION 01. INSTITUTIONAL PROFILE

1.1 Name of the Library/Information Center

1.2 Name of the Parent body

1.3 Nature of the library
[1] Health [2] Population [3] Nutrition [4] Health Population and Nutrition

1.4 Year of Establishment

1.5 Name of the librarian/Head: __

Designation

1.6 Official Address:

Telephone: Fax

Email: WEB:

SECTION 2: Collection

2.1. Please mention the total number of collection of your library_____

2.2 Please tick the following items with the number (approximate)

a) Textbooks _____ b) Reports: _____

c) Reference Books_____ d) Rare collection: _____

e) Manuscripts: _____ f) Research Papers: _____

g) Journals (inland) _____ h) Journals (foreign)_____

i) Newspaper: _____ j) News clippings_____

k) Audio/Video: _____ l) Micro forms_____

m) In-house Publications_____ n) Bound books/Journals_____

o) Others_____

2.3 Do you have any digital collection/ electronic Document?

[1] Yes (If yes, tick the following items given in 2.3a with appropriate figure)

[2] No (If no, skip 2.3.a)

2.3.a a) Full text database with _____records b) Bibliographical records_____

c) E-books_____d) E-journals_____

e) CDROM _____f) Others _____

2.4 What are the sources of acquisition? (Multiple choice)
[1] Purchase[2] Donation [3] Exchange[4] Internal publication

2.5 What policy do you adopt in selection of publication for acquisition? (Multiple choice)
[1] User survey by the library/institution

[2] Users' request through telephone/ written request/ slip.

[3] online request by the user

[4] Through meeting of the selection board/ library committee

[5] By the librarian as list supplied by the book vendors/ or from the publisher's catalog.

[6] As per the request of the administration of the parent body/ donor.

[7] others (specify) _____

[8] No scope for selection

2.6 What are the main sources of your purchase?

[1] Vendor[2] Publisher [3] Direct purchase from market by librarian

[4] Administration from market place[5] Others_____

2.7 Do you think that electronic document is useful for your library?

[1] Yes (Why Q. 2.8 and skip Q.2.9) [2] No (Why not Q. 2,9 and skip 2.8)

2.8 Why do you think that digital/electronic document is useful for library? (Multiple choice)

[1] More easy to use

[2] Less expensive

[3] Free download

[4] More convenient in caring and transmission to users

[5} Customized document delivery besides bibliographic information

[6] Compact storage is possible

[7] EDD services can be introduced

[8} Others specify _____

2.9 Why are you against digital library collection? (Multiple choice)

[1] User don't like it / prefer printed media

[2] Unavailable/ difficult to purchase

[3] No computer and related technologies are available in the library

[4] Limited/No infrastructural facilities (Electricity, telecommunication, ISP)

[5] Create additional workload to library staff

[6] Not suitable for public health

[7] digital document using technologies are not available to major users

[8] Others specify _____

2.10 Do you maintain any accession register?
[1] Yes[2] No (Skip 2.11)

2.11 What is the methodology for accessing?

[1] Manual register[2] Both manual and computerized Accessioning

[3]Computerized accessioning [4] Not maintaining but bibliographic database

SECTION 3: PROCESSING

3.1 How do you process your library collection?

[1] Manual cataloging/ card catalog[2] Computerized bibliographic database

[3] Both card catalog and database[4] Accession register only

[4] Neither catalog nor accession register/database [5] Other

_____

3.2 Do you maintain catalog for library resources?
[1] Yes[2] No (If no, skip to 3.7)

3.3 What is the form of catalog?

[1] Card/Manual[2] Computerized database

[3] card and computerized database both[4] Other_____

3.4 Do you follow any classification scheme?
[1] Yes[2] No (Skip 3.5)

3.5 Which scheme is followed for classification?

[1] DDC 19th Ed.[2] DDC 20+ Ed.[3] UDC[4} LC

[5] List of subject heading[6] Thesaurus [7] NML [8] Other_____

3.6 How do you arrange books on the shelf?

[1] Call number[2] Accession number[3] MFN/Record number

[4] List by almerah [5] Others_____

3.7 Do you have any provision for indexing documents?
[1] Yes (Skip 3.9 3.13, 3.14 & 315)[2] No (Skip 3.8)

3.8 What are the initiatives have been taken regarding indexing services? (Multiple choice)

[1] Periodical indexing/index to periodical articles

[2] Newspaper article indexing

[3] Preparation of list of new arrivals

[4] preparation of reading list on demand

[5] Online site listing

[6] Online bibliography searching and listing

[7] Subscribing indexing journals

[8] Others_____

3.9 Why don't you take any initiative for indexing? (Multiple choice)

[1] Lack of expert manpower

[2] Insufficient fund

[3] Extra work load.

[4] User never ask for such sort of services

[5] Others.

3.10 Do you have any provision for producing abstracting services?

[1] Yes (skip 3.12, 3.13 & 3.14)[2] No (skip 3.11)

3.11 Which are the following abstracting services are available in your library? (Multiple choice)

[1] Preparing abstract/summary/annotation of publications/journal articles

[2] Preparing documentation list of abstracts in journal articles/books/ reviews/reports etc.

[3] Purchasing abstracting journals [4] Others_____

3.12 Why don't you take any initiative for abstracting? (Multiple choice)

[1] Lack of manpower
[2] Insufficient fund
[3] Extra work load.
[4] User never ask for such sort of services
[5] Others_____

3.13 Do you face any problems in library services in the absence of indexing and abstracting services?
[1] Yes[2] No (skip 14)

3.14 What are the problems? (Multiple choice)
[1] Difficulty in tracing desired publications from the library

[2] Unable to help the user in choosing publications pertinent to his/her interest

[3] Users' attraction to the library is gradually decreasing

[4] User has to spend relatively more time in literature searching

[5] More time needs to be spent for a single user

[6] Others_____

3.15 Have you any plan to introduce indexing and abstracting services in near future?
[1] Yes[2] No

Section 4: Services

4.1 Does the library offer the following category of services?

a)	Reading room services	[1] Yes	[2] No (skip 4.2a)
b)	Reference and/or information services	[1] Yes	[2] No (skip 4.2b)
c)	Circulation/Loan system	[1] Yes	[2] No (skip 4.3)
d)	Interlibrary loan system	[1] Yes	[2] No
e)	Bibliographical services	[1] Yes	[2] No
f)	Indexing and Abstracting services	[1] Yes	[2] No
g)	Current Awareness Services (CAS)	[1] Yes	[2] No (skip 4.4)
h)	Selective Dissemination of Information (SDI)	[1] Yes	[2] No
i)	News clipping	[1] Yes	[2] No
j)	In-house database/CD-ROM searching	[1] Yes	[2] No
k)	Electronic Document Delivery (EDD)	[1] Yes	[2] No
l)	Internet and online browsing facilities	[1] Yes	[2] No
m)	Others_____	[1] Yes	[2] No

4.2 Please mention the seating arrangement in your library
   a) Reading room _____ persons
   b) Reference section _____ persons

4.3 How many volumes on an average a day does your library transact?

   a) Issue _____ volumes

   b) Receive/Back _____ volumes

   c) Reserve _____ volumes

   Inter-circulated_____ volumes

4.4 Please inform the ways you are providing CAS services? (multiple choice)

[1] Display new arrivals [2] Sending list/content page of new arrivals

[3] Sending accession list[4] Library bulletin

[5] Periodic message sent on recent arrival

[6] Telephone message [7] Electronic document delivery (EDD)

[8] Web site[9] Others_____

4.5 Do you maintain any service record in the library?
[1] Yes [2] No (Skip 4.6 & 4.7)

4.6 How many of the following categories of users on an average visit the library every week?

Cat.	description	Weekly visit
a	Employee of the parent body	
b	Researcher	
c	Govt. official	
d	Specialized user from outside organization	
e	Student and faculty	
f	General public	
g	Others	

4.7 Please mention the statistics of the following categories of services that were provided last week

Cat.	Description	Number
a	Number of users received the reading room services	
b	Number of reference questions answered	
c	Number of referral cases	
d	SDI service provided	
e	Number of users served with indexing tools	
f	Number of users used library catalog	
g	Number of users that consult abstracts/asked for abstract	
h	Number of users searching in-house bibliographic database	
i	Number of users searching CD_ROM database/full text	
j	Number of users received electronic document	
k	Number of user browsed internet resources	

Section 5: Human Resources

5.1 Please mention the total number of staff in your library.

[1]_____ Professional [2] _____Non-professional

5.2 Mention the number of staff of the following categories with their basic pay

Technical staff/ Professional staff						
Serial	Designation	Professional		Nonprofessional		Remark
		Number	B.Pay	Number	B.Pay	
1	Librarian/Director/Head					
2	Deputy librarian					
3	Assistant librarian					
4	Section officer					
5	Documentation officer					
6	Reference/ information officer					
7	Bibliographer					
8	Indexer/abstractor					
9	Cataloger/classifier					
10	Audio-visual librarian					
11	Reprographer					
12	Other					
ICT staff						
13	System analyst/manager					
14	Programmer					
15	Hardware engineer					
16	Network manager					
17	Data entry operator					
18	Others					
Semi/pera-professional						
19	Library Assistant					
20	Others					
Non-Professional						
21	Administrative officer					
22	Accountant					
23	Technical assistant					
24	Sorter					
25	MLSS					
26	Others					

5.3 Has there any library staff who now working with computer/IT/ICT?
[1] Yes _____ persons[2] No (skip 5.4)

5.4 Would you mention how they are converted/switched the discipline (traditional librarianship to IT/ICT) Multiple choice
[1] Additional institutional degree/short course
[2] Specialized training (home/abroad)
[3] Self education
[4] Special training/instruction from friends/colleague
[5] specialized workshop/seminar

5.5 Do you have any provision for evaluating the working staff?
[1] Yes[2] No (skip 5.6)

5.6 What is the methodology for evaluation? (Multiple choice)
[1] Service record analysis
[2] Evaluation form by the user groups
[3] Internal exam
[4] Observation
[5] Assignment
[6] Others_____

5.7 Do you have any provision for in-service-training/refresher training
[1] Yes[2] No (skip 5.8)

5.8 How many education/training programs of such category has been initiated during the last five years _____

5.9 Do you think that your existing work force suffices to cope with the present work load?
[1] Sufficient workforce[3] Excess staff
[2] Almost sufficient[4] Insufficient

Section 6: Library administration and finance

6.1 Pls. mention the Administrative body of the library?

[1] Library Committee[2] Administration of the parent organization

[3] Governing body[4] Donor Agency

[5] Finance Committee[6] Others

6.2 Has there any active participation of the Librarian in the administrative body

[1] Yes[2] No

6.3 Pls. tick the following options in which the librarian has active participation. (Multiple choice)
[1] Book selection[2] library Purchase and other acquisition work

[3] Staff selection and recruitment[4] Staff training and evaluation

[5] Essential maintenance [6] Others_____

6.4 What are the major sources of income of the library during this fiscal year (2006-07)? Multiple choice

Sl	Sources	Amount Tk
1	Annual budget of the parent body	
2	Govt. grant	
3	Donation	
4	Library investment	
5	Fees	
6	Other	

6.5 How much revenue have you received from different sources during the last four fiscal year

Fiscal Year	Amount (Tk)
2005-06	
2004-05	
2003-04	
2002-03	

6.6 How much the library spent under the following heads of expenditure during the last five years

Heads	2006-07	2005-06	2004-05	2003-04	2002-03
Purchase books					
Subscription of journals					
Purchase electronic books and journals					
Automation/computerization					
Purchasing equipment/ICT infrastructure					
Staff training					
others					

6.7 Is the current budget sufficient to meet emerging needs of your library?
[1] Yes[2] No

6.8 Do you have any program to raise fund for the library?
[1] Yes (skip 6.7 & 6.8)[2] No (skip 6.6)

6.9 What are the fund raising activities? (Multiple choice)
[1] Fee based service[2] Membership subscription
[3] Charge from EDD[4] Internet browsing fee
[5] Photocopy and reprographic charges[6] Others_____

6.10 Have you any future plan for fund raising activities?
[1] Yes[2] No (skip 6.8)

6.11 What will be the activities? (Multiple choice)
[1] Fee based service[2] Membership subscription

[3] Charge from EDD[4] Internet browsing fee
[5] Photocopy and reprographic charges[6] Not yet set

Section 7: Building and Infrastructure

7.1 Does your library function in-
[1] its own separate building[2] Within the main building
[3] Building outside of the organization[4] Other_____

7.2 What is the total space used by the library? _____sqft.

7.3 Please mention the allotted space in terms the following categories?

Sl.	Description	Space
a	Reading room	
b	Reference section	
c	Stack area	
d	Technical processing	
e	Administration and staff rooms	

7.4 Is the building air conditioned (multiple choice)
[1] Centrally air conditioned[2] reading room
[3] Stack areas[4] Processing department
[5] Administration[6] Staff room

7.5 Please mention the status of the following infrastructural facilities

Sl.	Items	Number/capacity
a	Computer	
b	Printer	
c	Internet connection	
d	Telephone/Fax	
e	IPS/UPS/generator	
f	Photocopy machine	
g	Audio-visual equipment	
h	Others	

Section 8: Automation/Computerization
(Skip the section if the library has no computer and related activities)

8.1 What is the present state of library relating to automation/computerization?
[1] Fully automated(Skip 8.2)[2] Partially automated

[3] Initiating automation/proposal submitted

[4] Neither automated nor any proposal in near future

8.2 Incase of computerization/automated fully/partially, please tick the following areas under went computerization/automated (Multiple choice)
[1] Acquisition/procurement activities[2] Technical processing
[3] Circulation control/ lending[4] Reference/Information service
[5] Periodical/serial control[6] Bibliographical services
[7] Reprographic works[8] Interlibrary loan transaction

[9] Computerized CAS/SDI[10] Administration and management

8.3 Do you maintain bibliographic database?
[1] Yes[2] No (skip 8.4 and 8.5)

8.4 When the database development program was initiated?
Yr_____ and
Up to this time _____ records have been entered.

8.5 Which software are you using for database?
[1] CDS/ISIS[2] WINISIS

[3] Access[4] Foxpro

[5] SQL server/ MYSQL[6]LIBsys

[7] Other_____

8.6 What are other application software being used by the library?

[1] MS word[2] MS Excel[3] MS Power point [4] Adobe Acrobat

[5] Photoshop/Illustrator[6]

Others_____

8.7 Whether the computers in the library are connected with LAN?
[1] Yes[2] No (skip 8.8 and 8.9)

8.8 What are the services available across the LAN

[1] File sharing[2] Discussion group/New group

[3] Message sharing[4] Bibliographical database sharing

[5] hardware sharing[6] Resource person sharing

[7] Other_____

8.9 Who is now operating the LAN?
[1] Network manager[2] Library staff having networking training
[3] Other IT staff[4] Others_____

8.10 Is the LAN/stand alone computers are connected with WAN/Internet?
[1] Yes[2] No (skip 8.11)

8.11 How LAN/PCs are connected with the internet?
[1] Local ISP/Hired domain[2] Free domain

[3] Cable modem/broadband[4] VSAT

[5]Dial up connection[6] Radio link

[7] Wireless modem[8] Other_____

Section 9: Knowledge attitude and practice toward ICT

9.1 Are you informed about IT/ICT application in libraries?
[1] Yes[2] No (Skip 9.2 and 9.3)

9.2 Please mention the knowledge and practice of existing library staff on the following areas of IT/ICT application in librarianship/information activities.
[1] Yes [2] No

Sl.	ICT application areas	Concept		Practice	
		Librarian	Other Staff	Librarian	Other Staff
1	Database searching				
2	Database design				
3	Creating text database				
4	Word processing				
5	Spreadsheet analysis				
6	Presentation design				
7	Digital document/Digitization				
8	Digital library/virtual library				
9	Web/internet browsing				
10	Web page design				
11	Automated acquisition				
12	Automated circulation control				
13	Electronic document delivery				
14	Handling e-book/e-journal				
15	Email sending/receiving				
16	Desktop publishing				
17	Configuring email account				
18	Sharing file/data across LAN				
19	Sharing hardware across LAN				
20	Establish dialup connection				
21	Document scanning				
22	Sending attachment through email				

9.3 What are the major sources of your knowledge relating the above issues of IT/ICT?
[1] Institutional education[2] Specialized training/workshop
[3] Refresher training[4] Seminar/Conference
[5] Self learning[6] Newspaper/Magazine
[7] Internet[8] Colleague/Friends
[9] Personal contact with ICT professional[10]
Other_____

_____
Signature of the Respondent

Appendix 3b
DCI- Users

PhD Research on
Information Systems for Health and Population Sector in Bangladesh Evolution, Structure, Gaps and Need-Based Design

QUESTIONNAIRE
for
Analysis of Information needs of users of libraries and information centers in the Health and population sector in Bangladesh

Section 1: User profile

1.1 Name of the respondent_____

1.2 Sex: [1] Male[2] Female

1.3 Category of Institution?
[1] Health [2] Population 3 Nutrition

1.4 Type of user?

[1] Researcher/Scientist[2] Admin/ policy maker[3] Doctor

[4] Teacher/Faculty/Instructor[5] Student/Trainee

1.5 Please mention the main library attachment?

[1] NHLDOC[2] ICDDR,B[3] BSMMUL

[4] DMCL[5] DGFP library[6] DGHS library

[7] NIPORT[8] MOHFW library[9] NIPSOM Library

[10] DPS library DU[11] BIRDEM[12] INFS, DU

1.6 Area of specialization/working area/research area?_____

1.7 Name of the organization/institution serves/represents_____

Section 2: Information needs

2.1 Please indicate the broader category of information needs and possible institutional support toward meeting the information needs (multiple choice)

Sl.	Categories of information needs	Institutional support				
		1	2	3	4	5
i.	General/daily information *e.g. price, source, location, recent news/events etc.)*					
ii.	Supporting information *(e.g. information on decision support functional support etc.)*					
iii.	Comprehensive literature for *(study, research, project, assignment etc.)*					
iv.	Rest & Recreation (*e.g. general readings, audio-visual etc.)*					

Code for Institutional support:
[1] Institutional library[2] Nearest library/information center
[3] Personal collection/library[4] Colleague/Friend
[5] Internet[6] Media (News paper/TV/Radio) [7] Other_____

2.2 What are the sources of information you usually consult to meet the information needs of the following categories: (Choose the best five sources for each category)

Sl.	Type of needs	Information Sources				
		1	2	3	4	5
i.	General/daily information					
ii.	Supporting information					
iii.	Comprehensive literature					
iv.	Rest & Recreation					

Source code:
[1] Text books[2] Journals/Articles
[3] Dictionary[4] Encyclopedia
[5] Newspaper[6] Statistical sources
[7] Handbook guide manual[8] Other reference collection
[9] literary books/magazine[10] Audio-visual
[11] OPEC[12] Bibliographical databases
[13] In-house CD-ROM literature[14] Internet/web resources
[15] Colleagues/friends/Researchers[16] Personal collection
[17] Radio/TV[18] Other_____

2.3 Whether you are aware of the following services offered by libraries and information centers you are using?

Awareness of library services

Sl.	Services	Experiences
1	Reading room services	
2	Circulation/Loan/Borrowing privileges	
3	Reference/information services	
4	Referral services	
5	Latest addition list books	
6	Reprographic/reproduction service	
7	Inter library loan service	
8	Newspaper clipping service	
9	Current Awareness Service	
10	SDI service	
11	Electronic/Digital document delivery	
12	Translation services	
13	Bibliographical service	
14	Network/Internet services	
15	Information consolidation and repackaging	

(Awareness code: [1] Aware; [2] Not aware; [3] Enjoy the services in the library; [4] Enjoy the services else where)

2.4 Please tick the mode(s) of information dissemination you prefer/feel convenient from the library? (Multiple choice)
[1] By your personal visit[2] Electronic Document Delivery
[3] Attachment with email[4] Over telephone/Fax
[5] By letter/Messenger[6] Access to the library web site

3.4 Which of the following sources of information you use frequently and rank the availability of these items in the library?

SL	Sources	Use frequency	Availability
1	Books and monographs		
2	Reference collections		
3	Recent Periodical articles		
4	Back issues of journals		
5	Technical reports		
6	Discussions with colleagues/fellow professionals.		
7	Manuscripts		
8	Newspapers/newspaper clippings		
9	Conference/seminar workshop proceedings		
10	Thesis/dissertations		
11	Patents & standards		
12	Research reports		
13	Maps		
14	Indexing and abstracting journals		
15	Bibliographies		
16	News clippings		
17	Films/Slides		
18	Government publications		
19	Primary data collected through survey		
20	Commercial data bases/information brokers.		

(a) Code of use frequency:[1] Most frequently used[2] Frequently used
[3] Rarely used[4] Not used
[5] Unknown/Never informed

(b)Code for availability:[1] Adequate[2] Fairly adequate
[3] Inadequate[4] Not available
[5] Don't Know

3.5 Please mention to what extent the data/information/sources supplied/available in the library match the timeliness of information need?
[1] most up to date [2] Fairly up to date
[3] Rarely up to date [4] Not up to date

Section 3: Use of the library

3.1 Please mention the purpose of visit the library? (Tick multiple options)

Purpose of library visit

SL	Purpose
1	To borrow books/periodicals
2	To browse library collection
3	To locate particular source(s)
4	To consult reference sources/tools
5	To avail their reference and referral services
6	To read newspapers
7	To search CD-ROM literature/bibliographic database
8	To browse internet/ search web resources
8	To spend time
10	Any other purpose

3.2 Please tick the frequency of your visit to the library

[1] Daily; [2] Weekly; [3] Bimonthly; [4] Monthly [5] As and when get assignment; [6] Leisure time; [7] Rarely [8] Any other frequency

3.3 How much time on an average do you spent for the following categories?

Cat.	Time spending sectors	Time code
A	Document searching/retrieval/duplicating	
B	Reading in the field of specialization	
C	Reading in the areas other than specialization	
D	Searching web resources/ internet browsing	
E	News paper reading	
F	Recreational reading / spent leisure time	
G	Gossiping with colleagues	
H	To consult the librarian/reference desk on research project/ assignment;	
I	To know new arrivals	
J	Others_____	

Time Code: [1] Less than 1 hour; [2] 1-2 hours; [3] 3-4 hours; [5] 5-6 hours; [6] 7-10 hours [7] More than 10 hours; [8] Not certain
[9] Never used [10] Not Available

3.4 Which of the following sources of information you use frequently and rank the availability of these items in the library?

SL	Sources	Use frequency	Availability
1	Books and monographs		
2	Reference collections		
3	Recent Periodical articles		
4	Back issues of journals		
5	Technical reports		
6	Discussions with colleagues/fellow professionals.		
7	Manuscripts		
8	Newspapers/newspaper clippings		
9	Conference/seminar workshop proceedings		
10	Thesis/dissertations		
11	Patents & standards		
12	Research reports		
13	Maps		
14	Indexing and abstracting journals		
15	Bibliographies		
16	News clippings		
17	Films/Slides		
18	Government publications		
19	Primary data collected through survey		
20	Commercial data bases/information brokers.		

(a) Code of use frequency:[1] Most frequently used[2] Frequently used
[3] Rarely used[4] Not used
[5] Unknown/Never informed

(b)Code for availability:[1] Adequate[2] Fairly adequate
[3] Inadequate[4] Not available
[5] Don't Know

3.5 Please mention to what extent the data/information/sources supplied/available in the library match the timeliness of information need?
[1] most up to date [2] Fairly up to date
[3] Rarely up to date [4] Not up to date

3.6 How do you locate information in the library? Please tick the SL of the following table to indicate specify the strategy you adopt for getting or locating information?

Information location strategy

SL	Activities
1	By browsing the content page of the periodicals in the Library directly.
2	Through available index, abstract or reviewed periodicals.
3	Through documentation list prepared and circulated by the parent library
4	By searching Library Catalogue.
5	By using the references/bibliographies given at the end of each article.
6	By discussing with own professional colleagues.
7	By approaching to Librarian.
8	By consulting bibliographies prepared separately.
9	Through library web site
10	Internet/Web

3.7 Which of the following services you are in habit of using by priority?

SL	Services	Priority	Availability
1	Borrowing privileges		
2	Reference services		
3	Referral services		
4	Display of current arrivals		
5	Inter library loan service		
6	Newspaper clipping service		
7	Current content service		
8	SDI service		
9	Translation services		
10	Bibliographical service		
11	Online services		
12	Photo copying service		

a) Code for Priority: [1] Top priority[2] Middle priority [3] Low priority [4] Not using at all [5] Unknown/Not Informed

b) Code for level of availability:

[1] Adequate[2] Fairly adequate[3] Inadequate [4] Not available

[5] Don't Know

3.8 Please mention the level constraints encountered and possible measures toward solution by you in using information?

Activities	Constraint	Initiative(s)	
Finding/tracing out the possible/suitable information sources			
Getting information quickly			
Getting up-to-date material			
Locating suitable sources			
Understanding research reports and statistics			
Materials available in different languages			
Getting up to date materials			
Inadequate reference			
Poor organization of materials			
Lack of proper guidance			
Lack of automated facilities			
To know what type of library services are available and where?			

(a) Constraint code: [1] Extreme difficult; [2] Considerable problem; [3] A little problem; [4] No problem at all)

(b) Initiative options code: (Choose the best two options)
[1] Seek assistance from librarian[3] Search bibliographical sources
[3] Consult subject expert[4] Consult colleagues)
[5] Internet[6] Go to another library
[7] Purchase/Subscribe

3.9 Please tick alternative measure(s) do you usually take in case of unmet needs from the library you are using (Multiple choice)

[1] Go to another library
[2] Request the librarian for procurement of document
[3] Search for substitute information/sources
[4] Take assistance from colleague/friends/association etc.
[5] Searching internet/web resources
[6] Leave searching
[7] By personal purchase
[8] TV/Radio program
[9] Other sources_____

3.10 Whether you have to pay for library services?
[1] Yes [Skip 3.9][2] No

3.11 Do you think that some sophisticated library services such as SDI, EDD, reprographic services, internet services etc should be fee based?
[1] Yes[2] No

3.12 Do you have any recommendation for the improvement of library services

1) _____

2) _____

3) _____

4) _____

5) _____

Signature of the respondent