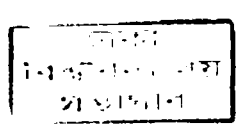
Assessing the impact of Internet in library and information services: A study of some higher academic institutions in Bangladesh



Assessing the impact of Internet in library and information services: A study of some higher academic institutions in Bangladesh

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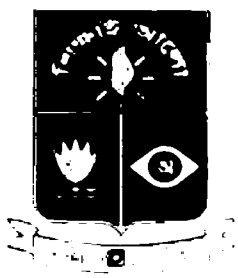
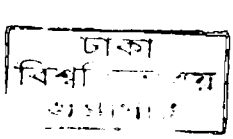


Supervisor's Certificate

I have the pleasure to certify that the thesis entitled **Assessing the impact of Internet in library and information services: A study of some higher academic institutions in Bangladesh** submitted by Md.Anwarul Islam, registration number 67, session (2004-2005) for the degree of Master of Philosophy (M.Phil) in Information Science and Library Management, University of Dhaka, is an original work carried out under my supervision. I am declaring herewith that this manuscript or parts of it has not been published or submitted for publication in anywhere in the world.



Dr. Salma Chowdhury
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Declaration

This thesis contains no material which has been accepted for the award of any other degree or diploma in any university.

To the best of my knowledge, this thesis contains no material previously published by any other person except where due acknowledgement has been made.

Md. Anwarul Islam

Dhaka
17 August, 2011

Dedicated to my parents

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Md. Anwarul Islam

17 August, 2011

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List of abbreviations/acronyms

AACR2	Anglo American Cataloguing Rules
ACM	Association for Computing Machinery
AGORA	Access to Global Online Research in Agriculture
ALA	American Library Association
ARPANET	Advanced Research Projects Agency Network
ASP	Active Server Pages
BIPC	Bangladesh INASP-PERI Consortium
BRACL	Bangladesh Rural Advancement Committee Library
BST	British Summer Time
BTTB	Bangladesh Telegraph and Telephone Board
BUETL	Bangladesh University of Engineering and Technology Library
CARL	Colorado Alliances of Research Libraries
CAS	Current Awareness Service
CD-ROM	Compact Disc – Read Only Memory
CGI	Computer Generated Imagery
CPA	Chicago Public Library
DDC	Dewey Decimal Classification
DUAC	Dhaka University Academic Calendar
DUL	Dhaka University Library
DVD	Digital Video Disc
EDD	Electronic Document Delivery
EEVL	Edinburgh Engineering Virtual Library
EIF	Electronic Information Floor
EIS	Electronic Information Services
E-TDs	Electronic Thesis Dissertations
EWUL	East West University Library
FAO	Food and Agriculture Organization
FGD	Focus Group Discussion
FTP	File Transfer Protocol
GLAS	Graphical Library Automation System
HINARI	Health Inter Network Access to Research Initiative
HTML	Hyper Text Markup Language
HTTP	Hyper Text Transfer Protocol
IBS	Internet Book Shop
ICT	Information and Communication Technology
IEEE	Institute of Electrical and Electronics Engineers
IFAD	International Fund for Agricultural Development
IFLA	International Federation of Library Associations and Institutions
IGNOU	Indira Gandhi National Open University
IIT	Indian Institute of Technology
ILL	Inter Library Loan
ILLINET	Illinois Library Network
INSAP	International Network for the Availability of Scientific Publications
IP	Internet Protocol
IPL	Internet Public Library
ISBN	International Standard Book Number

ISDN	Integrated Services Digital Network
ISP	Internet Service Provider
ISSN	International Standard Serial Number
ITU	International Telecommunications Union
LAN	Local Area Network
LII	Librarians' Internet Index
LIP	Library and Information Professional
LIS	Library and Information Services
LLC	Library Learning Center
LRC	Learning Resource Centre
MARC	Machine Readable Cataloguing
MARVEL	Machine-Assisted Realization of the Virtual Electronic Library
MSN	Microsoft Network
NASSDOC	National Social Science Documentation Centre
NGN	Next Generation Network
NGO	Non-Government Organization
NPG	Nature Publishing Group
NRC	National Research Council
NSFNET	National Science Foundation Network
OARE	Online Access to Research in the Environment
OCLC	Online Computer Library Center
ODL	Open Distance Learning
OMNI	Organizing Medical Networked Information
OPAC	Online Public Access Catalogue
OSA	Optical Society of America
OSS	Open Source Software
OUP	Oxford University Press
POD	Print-on-demand
RQ	Research Question
SAUL	Sher-e-Bangla Agricultural University Library
SD	Standard Deviation
SDI	Selective Dissemination of Information
SNT	Social Networking Tool
SOSIG	Social Science Information Gateway
SPSS	Statistical Package for Social Sciences
SQL	Structured Query Language
TCP	Transmission Control Protocol
UCAL	University of California Los Angeles
UGC	University Grants Commission
URL	Uniform Resource Locator
USAID	United States Agency for International Development
UUCP	Unix-to-Unix copy
VL	Virtual Library
VoIP	Voice over Internet Protocol
VPN	Virtual Private Network
VSAT	Very Small Aperture Terminal
WAIS	Wide Area Information System
WAN	Wide Area Network

WebOPAC	Web Online Public Access Catalogue
WLN	Western Library Network
WSIS	World Summit on the Information Society
WWW	World Wide Web
3G	3rd Generation

Chapter One
Introduction

1.1 Prologue

The emergence of Internet is one of the hallmarks in the revolution triggered by the networking technology. This technology has not only changed the ways computers worked and the way people worked with computer but also has made a profound impact in different areas, especially in those of learning, communicating and academic purposes. It has shrunk the world and brought researchers, student and academicians together. The influence of this technology can be found almost in every walk of life. In the last few years, the extent of Internet usage in the world has increased dramatically. The Web is used for various purposes, from surfing for pleasure to finding information. The availability of the Web, its ease of use, and the numerous needs it can answer immediately, have turned it into a key player in the cultural, social, education and others research aspect in the 21st century. There has also been a dramatic change in the use of Internet resources for academic purposes: if, in the past, students and faculty members first approached academic libraries when they needed information, nowadays they first consult the Internet (Troll, 2002). This has caused widespread concern among librarians and information professionals, who fear that the Internet will replace other sources of information, both printed and digital, available in academic libraries. This concern derives foremost from the fact that the information available on the Internet is still only partial, while much information still exists only in printed format. Furthermore, Web search engines index only a small amount of the information residing on the Web and most users do not access the information existing on the 'Invisible Web' which is considered some 500 times larger than the 'Surface Web' (Sherman & Price, 2001). Unhindered access to information is essential to freedom, equality, global understanding and peace. Therefore, the International Federation of Library Associations (IFLA) asserts that Libraries and information services are vibrant institutions that connect people with global information resources and the ideas and creative works they seek. Libraries and information services make available the richness of human expression and cultural diversity in all media. Library and information institutions should provide essential gateways to the Internet. For some they offer convenience, guidance, and assistance, while for others they are the only available access points. They provide a

mechanism to overcome the barriers created by differences in resources, technology, and training (IFLA Manifesto, 2002). The beginning of the 21st century witnessed a phenomenon viz. 'Information Explosion' or 'Information Flood' due to exponential growth of information which puts the users in a state of anxiety. The role of library is become challenging due to the invention of modern technology. A researcher, user, or scientist wants information immediately and expects immediate response irrespective of the size and nature of the collection. That is why it is now reality that library has to adopt modern technology like Internet in their functions and services. Any academic library, especially university library which occupies the central and primary place in teaching and research to meet the diverse and growing needs of educational programs at the undergraduate, graduate and post graduate levels. Internet technology is very much needed in academic libraries as the environments of academic libraries are constantly changing. As a result Internet has been widely used in academic libraries since its beginning and its impact has affected all aspects of library and information work. Librarians and other information professionals have been affected by the change in their roles, knowledge, skills and competencies. It is anticipated that the change of librarians' role and competencies would directly affect library and information services. The widespread use of Internet in the world is creating an impact on library services as well. Higher academic institutions in Bangladesh are no exception. Different academic institutions are now using internet technology in their libraries. Most academic institutions and library educators seem to have positive response to the changes

1.2 Background of the study

Use of computers with Internet gives birth to Information and Communication Technology (ICT). ICT is therefore is the integration of computers with the Internet with a view to processing and dissemination information. Internet has played such a significant role in the world that there hardly a field of activity in life where it is not evident. The advent of Internet which came on board as an outcome of an experiment conducted by a US Military team in attempting to exchange information is now is a tool that no field of life can do without. The Internet has made the access, retrieval and dissemination of information non-local and distance resources not only easy but also available to any end user regardless of origin. It has made changes in almost all aspects of access, retrieval and dissemination of information (Chanchage, 2001). In higher academic institutions, Internet is now playing a vital role. Higher education refers to a level of education that is provided at academies,

universities, colleges, vocational universities, community colleges, liberal arts colleges, institutes of technology and certain other collegiate-level institutions. They are sometimes known collectively as tertiary institutions. Completion of tertiary education generally results in the awarding of certificates, diplomas, or academic degrees. Tertiary education is normally taken to include undergraduate and postgraduate education, M.Phil, PhD (Wikipedia, 2010). Higher academic education in Bangladesh would mean educational institutions pursued after the higher secondary level. Considering these criterias, at present there are 84 universities in Bangladesh of which 53 are private and 31 are public. The demand for educational opportunities seems to have increased dramatically (U.G.C, 2010). Despite the rapid increase in the enrollment in higher education during the last decade the quality of education remains a serious cause of concern. A well established library is essential for any academic institution. As a focal point for teaching, learning, and research, it is expected to provide standard information resources. Today, academic libraries are struggling to keep their place as the major source of inquiry in the face of emerging internet technology. Internet technology in academic libraries has revolutionized not only the way of disseminating information but also how users seek and access information.

The Internet has significantly changed information management in developed countries through creating pressures to improve communication systems and develop more user friendly environments for information sharing. Now the Internet is penetrating developing countries, changing information practices in various sectors. It is changing traditional ways of conducting information business by establishing new sources of information and new methods of communication on a global basis. It has created competition by bringing many international and indigenous information technology vendors on to the same platform. It has helped policy makers to take advantage of access to global sources of information. However, this change can be clearly seen in only in the United States, Canada and some of the developed countries. As a developing country like Bangladesh, internet facilities of higher academic institutions are not satisfactory. Bangladesh entered into the computer village in 1964 with the installation of an IBM 1620 machine at the Atomic Energy Commission (Dhaka). Libraries in Bangladesh began to use computers in the early 1980s. Little progress was observed in the application of computers to library services between 1964 and 1995, but there has been considerable progress since 1996 (Islam & Islam, 2007). Very few library or information centers in Bangladesh is fully automated. Some libraries are

in the initial stages of the automation and networking process. A few libraries have CD-ROM access, but no initiative has been taken in action to produce information products on CD. Some libraries have an online connection and are providing external resource sharing on a limited scale. Only a few specialized libraries and public and private university libraries are now offering Internet facilities to their users and using Internet in their academic purposes. This is the first time an effort has been made to assess impact of Internet in library service in Bangladesh. This study may trigger more such research on impact of Internet in higher academic libraries in Bangladesh and beyond. It is hoped that the results of this study will be useful to learn from the experience of measuring the impact of Internet in higher academic institutional libraries in Bangladesh.

1.3 Objectives of the study

The purpose of this research is to explore the impact of Internet use in library and information services, library operations and to find out the best way of using internet in library operations. However the study is specially focused on the following issues:

- Measuring the impact of Internet in library operations and services. It covers both operational perspective and user's perspective.
- Examine the impact of Internet on respondents' demographic characteristics such as user category (faculty and student) and gender on their opinion on various aspect of using Internet.
- Examine the Internet using characteristics (such as for academic purposes, using Internet for OPAC, social and others) on user's perspective.
- The objective of the study is also to know the professionals' insight what do they think of using Internet in academic libraries and how do they feel using Internet in operational activities.

  Identify the present status of using Internet in some selected higher academic institutional libraries in Bangladesh

  Examine the present status and identified the problems of using internet in higher academic institutions in Bangladesh and suggests suitable recommendations.

Finally, the aim of this study is to help to promote internet based library services higher academic institutions in Bangladesh.

1.4 Research questions

This study formulated the following research questions to investigate. The research centred a number of questions designed to support the investigation:

RQ1. What are the information needs of the students, faculties, researchers and what information sources are available to the selected higher academic institutions?

RQ2. Where the respondents use Internet and in general why do they use Internet?

RQ3. What tools they usually use for finding information and what resources they consider to the most important for efficiency of the study?

RQ4. Does the selected academic library meet internet services to their users?

RQ5. What are the factors to assess the impact of internet in users' point of view?

RQ6. How much these academic institutions in shape to take internet benefits in operational aspects?

RQ7. How does Internet increase the professional competency in library services?

1.5 Significance of the study

The forces affecting libraries are numerous and complex and they are not easily described and calibrated. This research is best seen as an initial examination of some of the relevant trends intended to improve our understanding of the issues and choices that are emerging so rapidly. In general it is an attempt to show technological changes affecting libraries, and to show the impact of the Internet in particular. There is no doubt that the Internet is now affecting all aspects of life, since one of its perceived main objectives is to provide information. Libraries are expected to be the most affected entities because the Internet is now making available information that users are expecting. This is why James-Catalano (1995) views the Internet as the world's ultimate library. This fact has made it significant to study the impact that the Internet will have on the library in the future. Internet is an invaluable tool in nearly every organization. An organization that can not utilize Internet both as productivity tool and as a marketing tool may have a tremendous disadvantage compared to its competitors. The Internet is newly emerging as a source of information, especially in Asian countries including Bangladesh. This fact has necessitated that some attention be given to the topic concerned. This study investigated the impact of Internet use in some higher academic institutions in Bangladesh and finds the best way for use Internet tools in university library operations. The study may offer important opportunities about the impact of Internet in library and information services.

1.6 Scope and limitations of the study

The study focuses the impact of Internet in library and information services and at the same time it covers the use of Internet, Internet features use in library and information services, existing internet services, facilities and present scenario of using Internet in some selected higher academic institutional libraries in Bangladesh. At the same time, it identified the major problems faced by these university library users in getting their desired Internet services. Data analysis has been carried out in the following higher academic institutions Dhaka University, Sher-e-Bangla Agricultural University, BUET, East West University and BRAC University. The impact of the Internet on libraries in Bangladesh has received little investigation, and this has led the researcher to rely on some fragmented literature to build up a background upon which the study could be carried out. The scarcity of literature is one serious limitations of this study. It is noted that data provided in this writing are based on information obtained from questionnaires, observations and some other secondary sources has been used. Information may vary significantly over time, particularly in case of offering internet services to their users or making plan to offer for the users of the libraries. The most important limitation of this study is that it is confined to some leading higher academic institutional libraries. As such the results cannot be generalized to the wider population but nevertheless provides some indication of the probable trends.

1.7 Thesis outline

Chapter One – Introduction

This Chapter includes prologue, background of the study, objectives of the research, research questions, significance of the research, scope and limitations of the research, and a thesis outline.

Chapter Two – Literature review

Chapter two discusses the literature relevant to current research. The literature review covers user studies, ICT status of some selected public and private universities in Bangladesh and impact assessment of internet in library and information centers.

Chapter Three – Methodology

Chapter three discusses the sample size and population, data collection techniques (surveys, questionnaire development, interviews with key officials, interviews with library

professionals, observations, examining library records, focus group discussions), data analysis and processing.

Chapter Four- Impact assessment of internet in library and information services

Impact assessment of Internet on library operational perspective and

Impact assessment of Internet on various library and information services

Chapter Five- Internet services of some higher academic institutional libraries in Bangladesh

Internet and its development in Bangladesh

Internet services of some higher academic institutional libraries.

Chapter Six- Result and analysis of the study

Impact assessment of user's point of view and

Impact assessment of information professional's point of view

Chapter Seven – Findings, recommendations and conclusion

Chapter Two
Literature Review

2.1 Introduction

The review of literature is an essential part of any research, which gives necessary input to the researcher to frame the study on the chosen area. Use of Internet in library and information services and its application is a field where a large number of studies have been conducted and it is growing rapidly. A number of research reports, journal articles, books and conference papers on the subject of assessing the impact of Internet have been published. To determine the proposed study, a number of literatures have been reviewed. A review of literature reveals that the teachers and the students are the most frequent users of the Internet. They use the Internet mainly for educational purposes rather than for entertainment. In this phase, the present study focuses on the history of Internet and then the uses of Internet in library operations and services.

2.2 What is Internet?

The Internet is a collection of interlinked computer networks or a network of network. It is a global network of computers communicating under one set of guidelines, formally called TCP/IP. The Internet is more than a physical network of wires linking individual computers to one another. It is also a network of people and recourses. Internet as a wonder of modern information technology offers a gateway to myriad online resources. It works as precursor to the information superhighway, ensures high-level connectivity, and fosters an unparalleled degree of communication, collaboration, resource sharing and information access. It is not a specific space, company, or service. Although places, companies and services are accessible via the Internet (Jennifer, 1993).

2.3 The Internet use in libraries

The Internet has had transformative influences on how information is accessed and shared around the world. The impact of the Internet has varied from country to country, but it is in constant evolution. From a tool to connect people to information, the Internet has now become a social networking vehicle that is changing the way people in all countries communicate with each other. And libraries are in a unique position to provide both access and training on Internet use to their diverse populations. Libraries have a proud tradition of networking and sharing best practices; this becomes even more critical when facing the

challenges presented by the digital world. This study attempts to describe the impact of internet and the opportunities it presents to libraries, in particular in the higher academic institutions to facilitate access to information and knowledge. The connections of computer with the telecommunications open the new era in Information Communication Technology. Information and Communication Technology (ICT) therefore, is the integration of computers with telecommunication with a view to processing and disseminating information. ICT has played such a significant role in the world that there is hardly a field of activity in life where it is not evident. The internet has made the access, retrieval and dissemination of information from non-local and distant resources not only easy but also available to end user regardless of the region. It has made changes in almost all aspects of our lives as it plays a role in most of what we discuss today regarding access to dissemination and retrieval of information (James, 2003).

2.4 The literature on the Internet and its application in academic libraries: international perspective

Since the academic environment is a place where research is carried out and also a place where students and staff (lecturers and non-teaching staff) compile materials for studies and it becomes pertinent that there should be quick access to information, for better decision making opportunities. The internet has nowadays become an important component in academic institutions as it plays a pivotal role in meeting information and communication needs of information (Luambano and Nawe, 2004). The internet is so vital as an information provider source that even recent information can easily be opened world-wide with little or no effort and at a very modest cost. It was also noted by Luambano and Nawe (2004) that the internet provides up-to-date information. This is of paramount importance to researchers and students in that every information seeker needs accurate but up-to-date information in order to create impact in the growth of knowledge. But as it may, the advantages of the internet are so numerous that in any academic institution its uses become more vital. Surveys carried out so far show that the internet is always being made available in an academic environment and is most common in the developed nations in the world. There has been a huge, worldwide explosion in the use of the Internet. It is already changing the way we work, information services, library operations and also the way we live. Many countries around the world are developing in communication technology via satellite, wireless and cable to enhance worldwide Internet access. Accesses to the Internet and its

services have already become available through the use of digital TVs and mobile phones. Information technology has had an impact on the way we work for quite some time, but the Internet has now added electronic mail (email), teleworking and video conferencing to the workplace. In academic libraries, it has changed the way of working to the information professionals and gradually new technologies are being adopted with the help of internet.

The development of the internet during the past four decades has had a profound impact on society in general, and on the field of library and information science in particular: it has been strong, and it has involved processes, functions, services, media and information resources: the library as a whole. Information professionals today live their working life online, connected, "plugged-in" (Agee and Antrim, 2003). Remote access to resources is in some way clearing out physical libraries transforming them into cybraries, libraries without walls (Croud et al., 2002). In an age where technology, especially internet-related technologies, has become fundamental in every library operation and service, but also in the information habits of users and people in general, this literature review has been conducted mainly to allow the perceptions and expectations of librarians and information professionals toward the new information environment to emerge – how practitioners respond to an online information world which users take "for granted" and the roles librarians can play in this scenario (Tenopir and Ennis, 2001).

Impact studies aim to measure not only the reactions of the beneficiaries and the outputs generated by them, but also the proportion of any discernible change attributable to the institution. These definitions were established in the 1980s by the World Bank and others, and are still extant among the international development community, albeit with customized methodologies and criteria. There are generally considered to be clear and important differences between 'monitoring' and impact assessment both of which have a place in the project cycle. Some definitions from a joint Bank/IFAD/FAO study (Casley & Kumar, 1987) are both helpful and succinct: 'Evaluation [assessment] is a periodic assessment of the relevance, performance, efficiency and impact of the project in the context of its stated objectives. The full exercise of the evaluation function will require, in selective cases, supplementing the project management information system with data from impact studies that may be designed and executed outside the project management system itself.

Michel Menou (2001) who has worked on some of the most high profile international attempts at impact assessment has defined the need for evaluation of the impact of library and information services as meeting three principal requirements:

1. The scientific need to understand what information is and how it affects human behavior;
2. the managerial need to prove information is a critical resources; and
3. the political need to provide a rational for policies and justified investments and thus to secure popular support.

Computers, communication and information access technologies are effecting revolutionary changes in the way the information is stored, retrieved, and disseminated. Information technologies had an everlasting impact on the library and information centres (L&ICs) which has been dealt in detail elsewhere (Lakshmana Moorthy, A and Rajendran, 1990). Internet is perhaps the most important development in the field of information technology which has been described as arguably the most complex structure yet discovered in the world. Internet, a network of networks also called variously as the Cyberspace, Information Superhighway, the Net, etc has enabled global level inter-connectivity of computers and computer networks. Internet, a traditional avenue for sharing research data and information, has brought in a new era in global communications. It is an open computer communication infrastructure of the world (Neesham, 1994). The growth of Internet has been global and continuous. And it is growing at a rapid pace. In 1991 the Internet was in the reach of only 73 countries; 100 countries accessed it in 1993 and in 1995 it reached 148 countries. The number of host computers/sites and the number of users are almost doubling every year. In 1994, it had a user base of 20-25 millions with over two million connections which was expected to be doubled by the end of 1995. Now, Internet has about five million host computers with a new host added every ten minutes spread over 160 countries around the world (Treese, 1994). The Internet Architecture Board, one of the three erstwhile managing bodies of the Internet Society, has estimated a monthly growth rate of 10-15 per cent for computer hosts. It is providing connectivity to over 50 million users. And in North America alone, the Internet has over 37 million users. At present with a base of about 6.8 million subscribers, it is expected to reach 20 million by the turn of the century. It has been estimated that every month two million new users try to browse what Internet can offer them (Eager, 1994).

The turning of the 1990s deeply reflect positive attitudes towards the internet within the library community. The internet was seen by the majority as an opportunity for librarians and information specialists, who even enthusiastically embraced its tools, technologies and services. Some also quickly became sort of "gurus" of internet applications in libraries, starting very soon to preach the internet verbo among their colleagues. The literature began to show early that something was changing in the library world and in the librarians' professional life with the advent of the internet, a sort of "before" and "after" that made some authors speak of a real revolution and of great opportunity for the profession. The following is an account of the major points of success of the impact of the internet among librarians in the professional literature.

2.5 The Internet as a new paradigm

Abbas (1997) discussed the impact that the internet had upon the library profession, assuming that it, with networked resources, represented the biggest recent innovation in the field. The scenario has shown that "the library profession is contemplating a new paradigm, a new set of ideas; one of knowledge/thought/technology integration": consequently the best solution for the profession would be "to embrace these changes and accept a new idea of service as one which integrates the new technology with traditional ideas of service, quality, universal access, and cooperation". Rice-Lively and Racine (1997), following Miksa's (1992) two paradigms "the library as a social institution" and "the process of information movement as a system of human communication". For the first paradigm the library's most important function are "its collection of documents and facilities", while the second paradigm considers the information flow which forms human knowledge systems and communication, acknowledge the establishment of a new one where "information transcends the library building and its collections, and transactions with the user may not be face-to-face". In this new library, the information professional is the "key to the process of sense making and value-adding that enables users/clients to create their own information spaces".

2.6 The Internet as a revolution

Some authors like to speak about revolution, when they refer to the appearance of the internet in the library landscape. According to Go´rniak-Kocikowska (2001) a revolution "means a truly profound and far-reaching change, [. . .] it needs to affect all aspects of people's lives all over the world": it is thus legitimate to her to talk about a "computer

revolution" recently occurring in libraries, "with computer networks in place, with long-distance learning, and with rapidly growing possibilities to access library collections all over the world". While delineating the history and characteristics of this revolution, she notices that, as for all revolutions, it will be naturally embraced "by those individuals who regard these changes as positive, and who feel comfortable in the new situation created by the revolution". Hathorn (1997) interviewed some librarians from various institutions, with the provocative title "The librarian is dead, long live the librarian". Having once recognized the existence of a "digital revolution", the librarian's daily job was put under the lens of technology, with the conclusion that possibly there were great opportunities for this professional sector to promote their role, guiding patrons to find the right information, and giving technology the "human face of a librarian". Wittwer (2001), too, asserted the arrival of the internet as a revolution, which requests information professionals and special librarians (whom he addressed in particular) not only to "be competent at searching and finding information, but also to be fully computer-literate and skilled in the use and application of the main emerging technologies", in order to manage new information structures efficiently. It was then suggested that "the interconnection of world through the use of the Internet and Web has changed the fundamental roles, paradigms and culture of libraries and librarians once for all" (Rao and Babu, 2001). Underpinning the idea of revolution in the way people access information ascribed to the net. Dramatic changes in scholarly communication, which affect library culture with the power of a revolution, needed to be acknowledged (Rapple, 1997). The primary goal for librarians remains to provide the best possible service to their customers, realizing that, with "the ever-growing electronic availability of information on both national and global networks", the focus has shifted from ownership to the access to collections. Moreover in Chase's (1998) opinion, as we have entered the knowledge era and libraries and information centres are at the forefront of the digital revolution, the challenge for the profession for librarians is to transform themselves into value-adding knowledge professionals.

A study conducted by Elbakhiet (1998) where the author shows the Internet is an important component in the digital revolution in libraries. However there exists some controversy on whether it is an asset to libraries or it will replace libraries. This study was designed to study the perceptions of a group of library users on whether the library will loose it's ground of existence due to the emergence of the Internet. The findings of this study revealed that the

Internet would produce some changes in the areas of information transfer, services and human resources of the library. There will be less emphasis on print media. but remote access and exchange of data will be a prominent feature of the library. In addition human resources will be relocated to new areas of work since electronic material need no handling like the print ones.

Ramirez (2003) conducted a study on impact of internet on the reading practice of university community. This study presents the general results of a survey with college students of the Schools of Philosophy and Literature and Sciences of National University of México (UNAM to pinpoint the changes that the use of Internet has had on the reading practices of subjects with a high educational level from the usual reading habits of printed book culture in order to make a reflection upon the new role of libraries. The questions were prepared in such a way that the subjects could not foresee the results regarding Internet trends, and were based on four issues: experience, uses, new practices and perception. Moorthty & Karisiddappa (1998) shows the different use of internet in library and information centers. Internet is perhaps the most important development in the field of information technology which has been described as arguably the most complex structure yet discovered in the world. They have showed different applications of internet in library and information center such as accessing information on the web, bulletin board services, networking services, electronic or online journals, OCLC computer centers, scholarly publications, electronic commerce and so on. King & Choemprayong (2008) shows that consequences of the internet on traditional public library services. There is a concern that the introduction of the Internet has had a negative impact on traditional public library services. Three questions address this concern:

1. Has the existence of the Internet affected or disrupted in-person visits to public libraries?
2. The Internet has provided a second mode of access to public libraries in addition to in-person visits. Has this second mode of access affected in-person visits?
3. Workstations in public libraries have introduced a new mode of access to electronic sources provided by the libraries and additional Internet sources of information. Has this mode of access affected traditional public library services? Finally the result shows that general Internet users or use have little bearing on whether adults visit public libraries or number of visits to public libraries. Hollis (1998) identifies that British acquisitions librarians

are not significantly utilizing the Internet as important tools. Finds that they are satisfied with existing systems, but that there is scope for making greater use of the Internet. Research done in 1996 involves talking to staff from six academic libraries and one publisher, for a study to evaluate the effects of electronic publishing and the Internet on acquisitions work. With the ever-changing Internet, results can quickly become out-of-date. This article presents librarians' views of the facilities available in 1996 and states their ideas for improving those facilities. Indications are also given of how librarians could benefit from making greater use of the existing Internet.

Devi and Singh (2009) conducted a study on Internet Users: A Study of Manipur University Library where the authors assess the attitude of Internet users, taking into account the use of Internet by research scholars of Manipur University library, India. The major objectives were to identify Internet is not a substitute for the library and to find out the use of internet resources by research scholars for their research work. The findings of the study also revealed useful facts about the use of Internet by research scholars. On the basis of findings, some suggestions have been made to improve the use of Internet among the Research Scholars. To utilize the resources of Internet to its maximum, it is necessary to make the Research Scholars well-versed in the surfing and browsing on the net.

Jay and Webber (2004) investigate the impact of the internet on reference services in public libraries in England. Thirty responses were received, representing a response rate of 60 per cent. All respondents used e-mail to answer reference enquiries, but there was low use (and in some cases awareness) of other technologies. The librarians' attitude towards digital reference services, considering aspects such as improved access and increased efficiency, was predominantly positive. Some concerns were raised, such as the administration of public access computers. Patrons could access more electronic reference sources within the library than they could remotely. The majority of public libraries had web sites, most commonly offering access to the library catalogue and community databases. The results of this study are compared with two previous surveys. The paper concludes by identifying the need for public library managers to assess the changing role of professionals and para-professionals in delivering reference services, and to provide appropriate training. It also notes that despite the discussion of real-time reference, asynchronous digital reference is still more common in England. Aya (2000) investigates the use of the Internet by social scientists and academics in

Abuja, Nigeria, and reports that used the Internet to get information. Alasa and Kalechukwu (1999) point out that the Internet gives access to archives, expertise, and convenient and updated information. Kanungo (2007) shows the use of Internet in the scholarly communication of the social scientists in IGNOU and analyze its impact on their research and working in the Open Distance Learning (ODL) environment. In the category of scholarly communication, we include both research as well as course development work. Findings of this study highlight purposes and frequency of use of the Internet by the social scientists, their methods of locating, accessing and using information on the Internet. Parent and Cruickshank (2009) states that the internet adds the new dimension of connecting people with people; it has the potential to be a force multiplier to development. As library is an access point, the role of libraries begins with deploying these accesses through providing computers with internet connections to the people of the vicinity. In the developed world, particularly in the English speaking countries, the traditional belief in the primacy of the individual in society is being counterbalanced by the spread of communal, virtual network applications on the Internet (Wikipedia, MySpace, Flickr, etc.). We seem to embrace virtual communality even as we deny its counterpart in the bricks-and-mortar world. On the other hand, we would expect these same virtual technologies to achieve even greater success in developing regions of the world where community plays a greater role in social behavior.
A library is an access point; in the past it provided access to books and journals, but now this access also reaches the global information network. The roles of libraries are now changing. First step and often the easiest to achieve – the challenge is almost entirely economic: how to obtain the equipment, the Internet access, and how to fund the ongoing costs. In emerging economies, with a lack of infrastructure and a significant proportion of rural population, new, lightweight satellite and battery technologies allow for mobile libraries to be equipped with computers and Internet connections and to travel to isolated communities on a rotational basis. There are many examples, including 'Big Blue' in Zimbabwe and the Mobile Telecenter to-go in Ghana (Lucas, 2002).

One of the most significant events linking libraries, the Internet and the emerging economies was the World Summit on the Information Society (WSIS), held in 2003 and 2005. The goal of the Summit was to narrow the Digital Divide and ensure access to and the benefits of the global information network for all countries. While some aspects of WSIS, such as the issues

around Internet governance and the conflict between freedom of expression and perceived abuse of that freedom, remain controversial, there seems to be a cohesive view on the core issues around digitally-enabled knowledge diffusion (WSIS, 2008). Perhaps most importantly, WSIS raised awareness of the role of libraries and archives in the Internet age, a role that is sometimes overlooked as information has become a commercial commodity, and private businesses become more involved in amassing, managing and providing access to information on the Internet (IFLA, 2008). Crawford and Daye (2000) focused a survey of the use of the electronic information floor (EIF) located in Glasgow Caledonian University's Caledonian Library and Information Centre. The survey used both observational and questionnaire based methods and builds on a previous study which used focus groups and semi-structured interviews. The study was divided into two parts: an observational study and questionnaire based study. The observational study found word processing, sending and receiving e-mail, and Web browsing to be the most common activities. The more substantial part of the study was questionnaire based, the questionnaire being administered both on paper and electronically. The main findings were: most respondents were full-time students: most respondents were PC rather than Mac users; only 18 per cent use CD-ROMs and only about 13 per cent use online databases. About a third had problems in using the EIF. The main overall conclusions are that information searching is a minority activity and that the volume of non-curricular activity is substantial but unquantified. Peterson (2001) discusses how to deliver a library services via an Internet or Intranet, using library as an example. The main emphasis is on setting up a service to suit an online environment, designing user-friendly pages to ensuring acceptance of the new service and training your users to make full use of it. Siddiqui (2003) identified library services have been tremendously influenced by rapid technological innovation over the years. The Internet has virtually provided a new dimension to every area of library services and operations. The paper presents the result of a survey conducted to determine the availability of required hardware and software in the Gulf academic libraries and their willingness to participate in the EDD (Electronic Document Delivery). Their adoption of the Internet for EDD for resource sharing is essential if user self sufficiency is to be achieved. Hundie (2003) wrote an article on "Library operations and internet resources" and shows that Internet has rapidly become one of the most powerful global sources of a wide range of information presenting many possibilities for librarians and information providers to seek information relating to their day-to-day activities from buying

books and serials to teaching information literacy skills. This paper delineates how libraries can benefit form the use of Internet resources to enhance the quality of their various services, at the same time saving both money and time.

Mphidi and Snyman (2004) discussed that intranet has emerged as one of today's most effective tools for knowledge management. This article reports on the extent to which three South African academic libraries, selected by means of the purposive sampling method, utilize the intranet as a knowledge management tool. Based on the literature, knowledge management and an intranet are briefly defined. The advantages of the intranet as a knowledge management tool as well as the content of an intranet are discussed. The opinions about knowledge management and the utilization of the intranet as a knowledge management tool in the three academic libraries are weighed up against the findings in the literature. It is clear that a strong awareness exists of the importance of knowledge management and the value of the intranet as a knowledge management tool. However, the potential of the intranet as a knowledge management tool is not utilized fully. Ali (2006) seeks to examine the use of electronic information services (EIS) among the users of the Indian Institute of Technology (IIT) Library in Delhi, India. The study found that Boolean logic and truncation are the most often used search facilities by IIT users. Lack of printing facilities, terminals and trained staff are the major reasons that would discourage users from accessing the EIS. The survey also reveals that some 60 per cent of users face difficulties while browsing e-information. The paper provides suggestions for the further improvement of EIS to fulfill the information needs and requirements of users at the IIT Library, Delhi. Al-Ansari (2006) investigates the patterns of internet use by the faculty including purposes for use, its impact on teaching and research, internet resources that they use, and the problems faced while using the internet. Semertzaki (2008) pointed out the utilization, integration and exploitation of the internet among libraries in Greece. The study reveals that the internet is an essential and rigorous tool for librarians in Greece. It plays an important role for providing quality and quick reference services to users. Haridasan and Khan (2009) present the fact that electronic resources are a significant part of library collections. A large amount is invested in the development and management of e-resources in the libraries. The study aims to identify the acceptance of e-resources in the National Social Science Documentation Centre (NASSDOC) library in New Delhi, India and determine their usage,

performance, degree of user satisfaction, and barriers faced in the access of e-resources. It also attempts to find out the users' views about computer literacy among the social scientists. Mohsenzadeh (2009) wrote an article on "Application of Information technologies in academic libraries". The main purpose of this investigation is to define the status of the application of information technology in academic libraries located in Kerman, the center and largest city of Kerman Province, Iran, and to understand the problems and difficulties in using information technology in these libraries. Results show that the level of application of information technology in Kerman academic libraries is acceptable but they should improve their status to match with ever increasing demand for better librarian services at universities; the most important problem and serious difficulty is the lack of educated librarians, which needs a suitable investment and planning; and, although about 70 percent of librarians in Kerman academic libraries have participated in related training courses, the most serious difficulty in using information technology is still the lack of educated librarians.

Ramzan and Singh (2010) investigate the factors affecting librarians' attitudes toward IT application in libraries. It also aims to identify common underlying factors, which could be used to predict the probable behavior of librarians toward IT innovation in their libraries. The study found that the intensity of librarians' fears in IT handling, ability to cope with the ever-changing IT innovations and their level of understanding of IT-based rules and regulations were good predictors of librarians' attitudes toward information technology. Mudawi (2005) assess how the internet is used, in particular for email-based library services in Sudan. This research is based on primary data: a structured field survey was conducted among six information institutions in Sudan. The major patterns of internet use were: chat sessions; checking e-mails; and surfing professional sites. The majority of the sample did not utilize email for library services as such. The low use of internet resources for library services was due to inadequate access and inadequate time that can be devoted to internet activity, rather than a matter of lacking skills per se. But it was also found that there was a real need for training on using internet for library services. Moreover, lack of English language skills were a factor: findings indicated that there is a positive correlation between the level of English language proficiency and the level of using the internet. Hanauer (2004) surveyed a diverse community college to assess the use of the Internet by the students. The survey showed that although all the students surveyed had free Internet access through their

community college, only 97% of the students reported having access to the Internet. The survey showed that 83% of Internet users had access to Internet at their home and 51% of the respondents accessed the Internet at their college or library. 81% of the students reported to access the Internet most for college work and 80% for e-mail/chat.

2.7 Using Internet in academic libraries and related areas: Bangladesh perspective.

Bangladesh being a developing nation that has embraced ICT and the internet for some years, now finds it important to have internet facilities installed in academic institutions. However the present study examines the background to impact evaluation (or assessment) and its application, as indicated in the literature of a range of disciplines, and why it is needed, in general terms and more specifically use of internet in higher academic institution. In the context of internet impact, the concern is to identify potential users, and their needs, and to set a framework for methodology to meet those needs. The increased use of impact evaluation or assessment techniques and development of criteria for their use among the development community demonstrate their growing importance. However, in Bangladesh very few studies have been conducted on the using of Internet in library and information services and it other related areas.

There have been few studies on the present study areas in Bangladesh. Most of them relate to overall Internet access, its growth, usage, impacts, barriers, and position in Bangladesh. Azad and Islam (1997) give an overview of Internet access including the status of telecommunications in Bangladesh, launching of online Internet, current rates for online Internet access, providers views, major Internet users, impacts and barriers, etc. They explore high service charges by the providers, poor telecommunication system, government policy, and low buying power of potential clients as major barriers to Internet access in Bangladesh. Press (1999) describes the emergence of the Internet in Bangladesh with its various dimensions and constraints. He remarks that, as in many developing nations, the Bangladeshi Internet is hobbled by poor telecommunication infrastructure, lack of computing and networking equipment, few human resources, and an indifferent, bureaucratic government. Iqbal (1999) presents the background and growth of the local Internet, problems encountered by ISPs, and the role of the Bangladesh Telegraph and Telephone Board (BTTB). He also provides some suggestions for improved Internet access in the country. Rahman (2004) describes the present situation of Internet access in

Bangladesh, the dimension as well as the potential of Internet business, and problems of Internet access.

Nasiruddin (2003) investigates the intensity of Internet use by academics in Rajshahi University. He surveys 240 academics and examines the differences in using Internet resources and the information and communication needs of the academics according to their professional ranks as lecturer, assistant professor, associate professor and professor. But he does not explain the overall Internet infrastructure of the university. This paper attempts to fill the gap in respect of Internet access to academic institutions in general with a case study of Rajshahi University.

Roknuzzaman (2006) studied the current state of Internet access and its usage in Rajshahi University, the second largest pubic university in Bangladesh. The study used a questionnaire-based survey method to investigate the infrastructural facilities for Internet access and to know the patterns of Internet use in all the 47 departments of 7 faculties, 5 institutes, computer centre, central library and administrative building of the university. Although the university community is deriving some benefits from internet access, the study revealed that nearly half of the responsible authorities of the various sectors are not satisfied with the existing facilities owing to several constraints. On the basis of the prevailing situation, this article suggests future directions for better Internet access in the common interest of the university community.

Mostofa (2011) examines the use of Internet among business students in Darul Ihsan University, a pioneer private university of Bangladesh. A total of 162 questionnaires were distributed and 137 completed questionnaires were returned. Findings reveal a high percentage of Interne use among students. More than 56 percent of the respondents use the Internet for educational purposes. The access point for them is mostly the university. Google and Yahoo! search engines are found to be more widely used than other search engines. The major problems faced by the students in their use of the Internet include slow access speed. Recommendations that the bandwidth should be increased to overcome the problem of slow connectivity of the university to Internet and more computers with the latest specification and multimedia facilities should be provided.

Islam and Islam (2007) conducted a study on Use of ICT in Libraries: An Empirical Study of Selected Libraries in Bangladesh. The study focused the ICT based services of selected libraries in Bangladesh. A number of problems were founded including administrative

barriers, skilled manpower, financial support, ICT support and so on. Recommendations and action plans were developed to overcome the problems.

Abdus Sattar (1997) conducted a study on "Problems & prospects of new technologies in library & information services of Bangladesh" where author observed that only around 50 libraries evolved some computer & technological systems. Due to rapid advances in computer, communication media like internet, & other related technologies, libraries could not coup up with the trend. While the application & uses of technologies in libraries & information centers are developing very quickly in other countries; the progress in Bangladesh is a little bit satisfactory. The role of librarians has been greatly affected by ICT. The traditional roles remain but the tools have changed. Librarians now use computers and the internet to create collect, consolidate, communicate, and preserve information. Academic libraries in Bangladesh are presently facing difficult challenges in their endeavors to modern technologies. The challenges are consequently leading to the requirement for more specialization. In this regard a well equipped library with the facilities of modern information infrastructure and technologies could satisfy the maximum demand of technology conscious user. In this case, new technological facilities can make the academic libraries highly developed and make them able to keep pace with dynamic and changing world (Rumee, 2003). Although it could do much more, still availability of online Internet service is making significant positive changes in the country. The benefits for business communications, both with respect to cost savings and speed, are noteworthy. Families with members staying abroad are welcoming the Internet for frequent and cheaper communication. Researchers are getting valuable information quickly at modest cost, which was not possible before. Other business houses and entertainment stars are gradually coming to accept the Internet as their ultimate communication tool. The ISPs are carrying out special promotional activities to provide Web page services. A new social class is being created, mainly amongst the young generation who find the Internet an effective tool for their career development and the globalization of their thoughts and creativity. Many Internet users have stated that a whole new world has been opened to them, they are getting a new source of knowledge, and they are also making relations with many good friends and organizations worldwide. But some say that going online is a very costly habit, which sometimes appears as an addiction and causes a big waste of time. A group of young people, notably from the affluent section of the society, is abusing the Internet by using it mostly for entertainment, which is certainly not a

healthy practice for a poor country like us. But the saddest news is that Bangladesh has yet to set up an academic network to provide Internet access to the large number of university teachers, students, scientists, and researchers who play vital roles in building a better nation. Hope that ever increasing number of people accessing the Internet coupled with recent explosion of information resources on the Internet may have considerable implications for library operations and services. Library professionals are depending more and more on the Internet for their various operational and service purposes. The present survey is, therefore, an attempt to assess the effectiveness of the Internet in library and information services and what role it actually plays in the educational system with special reference to some selected academic libraries in Bangladesh.

Chapter Three
Methodology

3. 1 Introduction

This part discusses the research design and data collection methodology used in this study. Methodology is an important part of any research and it is very difficult task to conduct a research in a developing country like Bangladesh. People are not too much conscious about research works. Before conducting the field work at the very inception, an effort has been made to examine the selected higher academic institutional libraries and also to collect all relevant documents like prospectus, brochure, catalogue, official reports and other relevant documents published by the academic institutions. The methodology employed in this research combined multiple methods of data collection and analysis. Both quantitative and qualitative data were obtained from the surveyed higher academic libraries. Quantitative data were gathered mostly through structured and unstructured questionnaires. Qualitative data were collected through interviews, observations, FGD (Focused Group Discussion) and documentary analysis. Quantitative data was analyzed using some Statistical Packages.

3.2 Selection of study areas

A total of 5 higher academic libraries of Bangladesh were purposefully selected for this research. The study areas were:

Table 1: Study area

No. of Study area	Name of the University Library	Location
Study area 1	Dhaka University Library	Dhaka
Study area 2	BUET Library	Dhaka
Study area 3	East West University Library	Dhaka
Study area 4	BRAC University Library	Dhaka
Study area 5	Sher-e-Bangla Agricultural Univeristy Library	Dhaka

3.3 Selection of respondents

For this study, respondents were selected not in random but efforts were made so that a good representation of the targeted users could be achieved. There were two types of questionnaire, one is for the students and faculties and another one for the respective university library personnel. The survey for this study was carried out over a period of 10 days for each university libraries for data collection. A total of 820 users were selected for

this study. There were 600 students and 220 were teaching faculties. An online version of the questionnaire was used to collect data only for the respective university faculties using the following link (http://www.kwiksurveys.com/?s=ICHOKJ_26245cf1). It is really challenging to contact with the teaching faculties due to their academic and different administrative activities. The Uniform Resource Locator (URL) to the questionnaire was distributed to faculties through emails. Finally, total of 540 valid questionnaires were returned and the response ratio was 65.85%. The followings are the data details that have been taken for this study.

Table 2: Respondents from different university library (Returned questionnaire)

Name of University Library	Student	Faculty	Total
Dhaka University Library	200	50	250
BUET Library	50	26	76
SAU Library	50	24	74
East West Univeristy Library	50	20	70
BRAC Univeristy Library	50	20	70
Total	400 (600)	140 (220)	540

As earlier mentioned, the questionnaire developed for this study consists of two types. The first questionnaire was for the library users of the respective university library. The second part explores the professionals' aspect as it covers their territory. The questionnaire was pre-tested by 5 professionals to ensure validity and reliability from each university library. It was found that questionnaire did not need any major changes. Questions were easily understandable and options were given in the question are appropriate. In general, a total of 92 professionals were selected purposively for the study and questionnaires were sent to them. Among them 60 professionals filled it up and replied accordingly. The response ratio was 65.21%.

The questionnaire consisted of following elements for the university library user.

◈ Demographic information such as user category and gender. Demographic information has been analyzed only for the students and teaching faculties, not for the library professionals.

◈ Experience of Internet use, frequency of Internet use, access points of using Internet and so on.

◈ Respondents' satisfaction with Internet services of the selected university libraries, level of dissatisfaction and possible solutions.

3.4 Data collection techniques

The data required for this research were collected through survey, observation and interview methods. Besides, Focus Group Discussions (FGDs) were conducted to know about present internet services of these libraries, information needs of the users, sources of information, use of the these libraries, reading, listening and viewing habits of these libraries users. Following dimensions were measured by the survey needs of internet using in libraries, focused on usage of internet, usage pattern, and comments part of user. To maximize the response rate, responses were advised that their responses would be completely anonymous and the data would only be used for the purposes of this study. The following data collection techniques were used in this research:

3.4.1 Surveys

A survey is a method that is applicable for gathering basic data in a community. In this research, survey method based on structured and unstructured questionnaires was conducted to obtain basic data about the university library.

3.4.2 Questionnaire development

Two sets of structured questionnaires (one for the library staff and one for the library users) were used in this research. The first set of questionnaire was developed for interviews with library uses using the libraries (see Appendix I). The questionnaire was made of with simple comprehension; as a result, the respondents easily chose the appropriate answer. Sometimes the questionnaires were filled in while the respondents were unwilling to fill up the questionnaire. The questionnaire was prepared using both closed and open ended questions to get both quantitative as well as qualitative data from the respondents. In close ended questions, respondents provided their answers by placing a tick (√) in the appropriate spaces provided. With regard to questions on impact of internet in library and information services, a 7-point Likert Scale was used. For example, what impact do you think the internet has had on overall well-being of the library? [1 2 3 4 5 6 7]. Respondents were asked to either encircle or tick the appropriate number.

The second set of questionnaire was prepared to explore the Internet based services, Internet activities in library and focused library professionals thinking of using Internet. The questionnaire included the background information of the library, software they used,

automation facilities, ICT facilities, web based library services, library activities, IT access and special services offered by the library, professional satisfaction, strong and weak point of using ICT in libraries and other factors of the libraries relating to research (See Appendix II).

3.4.3 Pilot survey

A pilot survey was conducted on Dhaka University Library and fifty users selected for the pilot survey. The pilot survey was conducted to test the adequacy of the items incorporated in the questionnaire, to ascertain the field work problems in conducting the main survey and to find out the approximate time required to complete the field work. The questionnaire was piloted to avoid the chances of distributing a poorly designed questionnaire which could cause confusion, to ensure the questionnaire was free of errors. The final questionnaire was modified based on this pilot survey. While conducting the pilot survey, the questionnaire was in English. Based on the experience of the pilot survey, some new questions were added to the final questionnaire.

3.4.4 Interviews with users and library personnel

Interviews are an important data collection tool. This technique allows to reaching the respondents on a one-to-one basis to elicit more detailed information. The researcher interviewed selected university personnel and these interviews were helpful and effective. In case of user interviewing, some of the respondent's questions were seemed to be irrelevant, but these were listed with patience. In each interview session, which ranged from half an hour to one hour and field notes were also taken. Apart from formal interviews, information was also gathered through informal conversations through email and over cell phone.

3.4.5 Observations

The observation methodology is used to record the behavioral patterns of people, objects and occurrences without questioning or communicating with them. A great deal of useful information may be obtained by simply observing people. In this research, an observation schedule was used. It was conducted to capture information on users' daily lives, behavioral patterns, types of Internet services delivered by the libraries to them, types of information needs they require, etc. The observations were conducted for the purposes of gaining additional data and triangulating the data gathered from the interviews.

3.4.6 Focus Group Discussions (FDG)

Focus group discussion is a moderated discussion about a defined set of topics. It is a social research method of gathering qualitative research data. In this method, each group consists of six to twelve persons and discusses a particular topic under the direction of a moderator. Focus groups typically last for one to two hours, and the conversation is usually recorded so that details can be reviewed later. In a focus group discussion, participants talk under the guidance of a moderator who keeps the discussion focused, ensures that everyone participates, and tries to encourage the participants to discuss topics in-depth. Focus groups enable researchers to have access to the opinions, viewpoints, attitudes and experiences of individuals. The focus group discussions in five university libraries were conducted during July 2010 to December 2010. A total of 10 group discussions (2 group discussions were conducted in each survey area) were conducted with representatives of users and professionals of the library to allow a deeper discussion of the some of the issues which cropped out in the interviews. Each group consisted of 5 respondents. Before starting each interview session, the objective of the study was explained to the respondent. The summary of focus group discussions is discussed in findings and recommendations section.

3.4.7 Examining library records

The relevant documentary sources of information were used for the purpose of this research. Library records, such as the register of Internet using, daily Internet user registers and commemoration register were used to collect information about the Internet uses in libraries by the users. These records provided a fair account of the holdings of the library, and its operations and services.

3.4.8 Data analysis and processing

The data collected from the two sets of questionnaire of this study were duly edited to verify, analyze and fulfill the stated objectives. All the questionnaires were duly coded and edited for computing input. The steps followed in the process of data input are:

- Conducting validation checks to ensure that data have been correctly entered into the computer; and
- Preparation of output tables

Quantitative data were analyzed using the Statistical Package for Social Sciences (SPSS). The frequency counts were performed on data to obtain the descriptive measures.

3.4.9 Quantitative methods

Quantitative data item such as, amount of information materials, number of users, ICT activities, IT access; these responses were presented numerically. Statistical measures such as percentages and measures of variations were computed to interpret the data. The users' opinions regarding their background information, Internet use, needs and satisfaction, library services, activities and benefits, library performance and impact were presented as a tabular format.

3.4.10 Qualitative methods

In analyzing qualitative data from the interviews, observations and focus group discussions, participants' statements were transcribed and interpreted as direct quotes. They were also used qualitatively to support the analytical discussion of the research findings.

3.4.11. Mann-Whitney *U*-test The most common nonparametric statistical test for unrelated samples of scores is the Mann-Whitney *U*-test. This test is used for similar research design as the independent *t*-test. In other words, it can be used on two groups of scores that are independent of each other. The null hypothesis tested by the Mann-Whitney *U*-test is that there is no difference between the two groups in terms of their opinions on impact of Internet on academic activities, overall impact of electronic resources, overall user satisfaction and overall electronic resource facilities.

3.4.12 Pearson's chi-square test (χ^2)

This test is the best-known of several chi-square tests – statistical procedures whose results are evaluated by reference to the chi-square distribution. Its properties were first investigated by Karl Pearson in 1900 (Pearson, 1900). In contexts where it is important to make a distinction between the test statistic and its distribution, names similar to Pearson X-squared test or statistic are used. Results of cross tabulations on user category try to show is there any significant difference between male and female respondents, student and faculty respondents on the impact of Internet in academic activities.

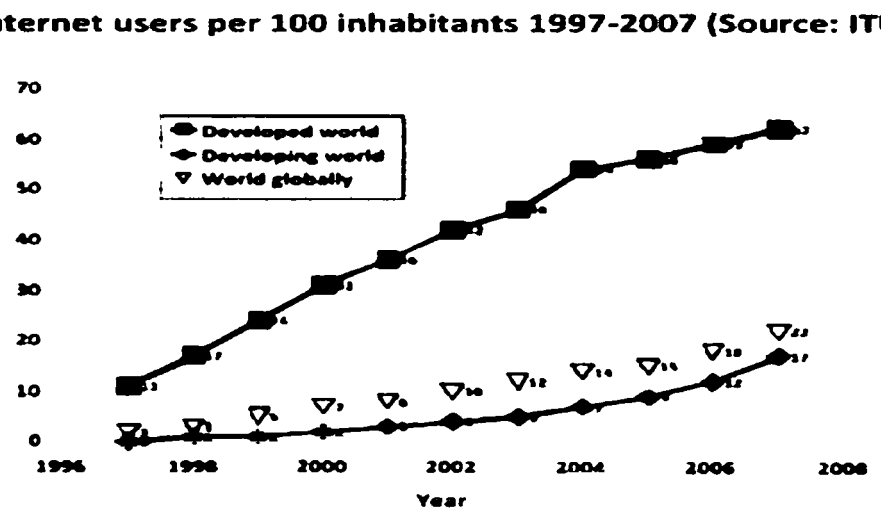
Chapter Four

Internet and Library and Information Services: An Operational Perspective

4.1 Internet

The Internet is a global system of interconnected computer networks that use the standard Internet Protocol Suite (TCP/IP) to serve billions of users worldwide. It is a network of networks that consists of millions of private, public, academic, business, and government networks, of local to global scope, that are linked by a broad array of electronic, wireless and optical networking technologies. The Internet carries a vast range of information resources and services, such as the inter-linked hypertext documents of the World Wide Web (WWW) and the infrastructure to support electronic mail (James, 2003). Most traditional communications media including telephone, music, film, and television are reshaped or redefined by the Internet, giving birth to new services such as Voice over Internet Protocol (VoIP) and IPTV. Newspaper, book and other print publishing are adapting to Web site technology, or are reshaped into blogging and web feeds. The Internet has enabled or accelerated new forms of human interactions through instant messaging, Internet forums, and social networking. Online shopping has boomed both for major retail outlets and small artisans and traders. Business-to-business and financial services on the Internet affect supply chains across entire industries.

Figure 1: Growth of Internet



4.2 History of Internet

The idea of the Internet a distributed communications network with no one central point can be traced back to the days of the telegraph; however, the real research basis was led by the United States Advanced Research Projects Agency (ARPA) in 1968 to develop a series of protocols or procedures for computers to communicate to each other over a packet network. This suite of protocols published in 1974 is called Transmission Control Protocol/Internet Protocol (TCP/IP) and is the computational foundation of the Internet (Hauben, 2008). Why packet networks? With circuit-switched networks, traditionally used for telephones, each time a connection is made it remains exclusive to that connection – it cannot be shared. This wastes bandwidth (think of how much of your most recent telephone conversation was silence). In a packet network, the data is divided into packets and sent by a variety of connections sharing these connections with other data packets for other communications and be reassembled in the correct form at the destination. This provides much more capacity. The first two nodes to connect were at the University of California Los Angeles (UCLA) and at the Stanford Research Institute. This was in 1969. At first, the Internet ran on ARPANET, a small US Government backbone. The main users were scientists and researchers employed by the US Government. However, in 1986 the US National Science Foundation (NSF) established NSFNET, substantially increasing the transmission capacity in order to link five US supercomputing centres. This increase in capacity and expansion of US academic networks effectively opened up the Internet to non-governmental involvement first universities, and then commercial interests (Howe, 2007). This initial investment in the Internet backbone also granted the US a first-mover advantage in Internet use and capacity, and the US still has the largest backbone capacity in the world. However, other countries, Norway and the Netherlands among them, have taken advantage of technology and their smaller size to provide Internet access to a larger percentage of their population than has the US. The impact NSFNET had on Internet growth can be seen easily in the increase in Internet hosts (i.e. connected computers): less than 2,000 in 1985, 2,300 in 1986, nearly 25,000 in 1987, and nearly 60,000 in 1988. Internet growth continues to be astronomical; as of 2008 it is estimated that there are half a billion hosts (Zakon, 2006)

4.3 Linking networks

Although the US conducted much of the original Internet research, other countries also established packet networks and, as these networks grew, connected them to the Internet.

The first international connection to the ARPANET was established between the US and Norway in 1973, followed soon after by the US with the United Kingdom. When TCP/IP became the standard protocol for the Internet in 1982 the rate of international connections increased rapidly. At this time the network was called the 'Internetwork', later shortened to Internet. The capacity of a country to connect with the global Internet depends on that country's own internal network capacity. Much of Africa, for example, lacked investment in communications technology and thus had only very slow and narrowly distributed technology for data communications in the early 1990s, inhibiting the ability to connect internationally. This situation has improved; in 1996, the Leland Project, financed by the United States Agency for International Development (USAID), began upgrading elements of Africa's digital infrastructure and thus improving Internet connectivity. This is only one of many projects looking at increasing Internet access in developing countries (USAID, 2008).

4. 4 Using the network

One of the earliest applications for the Internet was electronic mail (e-mail), first adapted for ARPA in 1972. E-mail allowed remote users to send messages to each other, and the success of this application alone was enough to inspire continued investment and development. E-mail was followed by Telecommunication network (Telnet), which enabled users to connect to other computers remotely, and File Transfer Protocol (FTP), which enabled them to transfer files from one computer to another. At first difficult to use, these applications developed standardized commands and thus became more widespread. However, they were still not user-friendly as we understand the term In 1991, Tim Berners-Lee proposed the concept of the World Wide Web, wherein different forms of files residing on computer hosts could be represented through a common language (HyperText MarkupLanguage–HTML) and connected through a common protocol (HyperText Transfer Protocol–HTTP). This would allow information to be represented in a more human-accessible format, and also allow information to be connected through semantic, hierarchical or other relationships according to the creator's intentions. It took several years for the community to develop the tools and software to take advantage of HTML/HTTP. The real breakthrough came with the introduction of Mosaic in 1993. Mosaic was one of the first browsers, and enabled creators and readers of the World Wide Web greater scope in using graphics and layout effects to display information. It also enabled the crossover from the UNIX operating

system which was the then standard for the Internet to a Microsoft Windows operating system which was the most popular operating system for home computers.

What this really meant was that users and not just users in research institutions, but users at home as well instead of being confronted with a directory tree containing dozens of ambiguously labelled files and non-intuitive commands to access them, now had a graphical view of meaningfully-labelled files organized in context. And furthermore, through hyper linking one could follow the thread of one file on one computer to a related file on another. But until the World Wide Web came, internet surfing was not an easy task for the common man not having some skills, knowledge of commands and the ways of the computer. WWW enabled one to reach his information just by clicking and clicking the words that are highlighted in the screen. The significance of this development cannot be over-emphasized the user of the World Wide Web now had a coherent view of a library of files distributed across host computers all over the world. The explosion of the World Wide Web also created an increased demand for means to search the information, taking advantage of hypertext linking. Lycos was created in 1993, followed by Yahoo! and Alta Vista in 1995, and then Google in 1998. These days, it may be hard to remember that there were other search engines than Google; this illustrates how rapidly the technology of the Internet has changed, and continues to change, and how the change can be sudden and dramatic (Parent and Cruickshank, 2009).

4.5 Internet access tools

Internet provides various tools to access communicate and transfer information. These tools are used to access databases, send E-mail, read news, download files and a variety of other applications. The followings are the important tools of the net:

4.5.1 Electronic mail: E-mail is the most popular service on the Internet used for communication of information and interaction with each other across the globe. It is the quickest, cheapest and most efficient means of two way communication. E-mail has made it possible to transfer message instantaneously to any corner of the world.

4.5.2 USENET: Usenet is an international meeting place where people gather to meet their friends, discuss the day's events and keep up with the current trends. It is a distributed action of computers that exchanges messages via a set of agreed upon protocols called newsgroups.

4.5.3 TELNET: Telnet is utility which allows users to log on another system and use various services available on that host. It can be used to access many libraries related to their subject areas and communicate among them.

4.5.4 File Transfer Protocol: File Transfer Protocol is a tool to copy files from one computer to another computer across the Internet. It can be used to transfer files, data, articles, software and other useful information from the Internet.

4.5.5 Archie: Archie is a collection of servers which can easily search for information at different anonymous FTP sites on the Internet and makes that information available to users. All these servers pool information together into a huge global database which is updated periodically.

4.5.6 Gopher: Gopher is a menu-driven application that allows one to hop around the globe looking for information in a variety of libraries or servers. Unlike Archie which helps in finding information, Gopher actually gets the needed information and puts it on the computer screen.

4.5.7 Veronica: Veronica is a search tool which allows one to quickly scan most gopher servers in the entire gopher surface for particular files and directories.

4.5.8 Mosaic: Mosaic is a web browser which provides an easy way to reach audio, video, text and graphics.

4.5.9: Wide Area Information System (WAIS): WAIS is a client server-based method of text-oriented information searching and retrieval system. If a search is made on a keyword or topic, a WAIS server scans Internet libraries and gives a master index providing links to all the sites closely related to the topic.

4.5.10: World Wide Web (WWW) : World Wide Web or WWW is the most popular and highly used services on the Internet. Web is a client server-based distributed hypertext multimedia information system. The major features responsible for the rapid growth and widespread acceptance of the web are:

I. It is a multimedia information system

II. It is a highly interactive embedded with hypertext links

III. Web is global in nature permitting unrestricted dissemination and

IV. Web has achieved a degree of user friendliness in its interface.

4.5.11: Internet Search Engines: Explosive growth of heterogeneously organized information resources on the Internet is making it very difficult for anyone to search, locate,

and timely access to required information. There are some programs that help the researchers to browse/ surf the net websites and locate required information on the Internet known as search engines. Search engines are broker of information – sites created to help people to navigate Net (Barnard, 1999).

4.6 Internet and library

Internet is the most talked about subject in library and information science field. If we take any journal of library science, we will surely find at least one article on Internet. It acts as a global Information Superhighway. It has already become the primary mode of communication. Researchers from all corner of the world are finding their works thrives in a networked environment. Immediate access to the work of other scientists and a virtual library of millions of documents afford them the ability to incorporate huge amount of knowledge (Nair, 1999). Internet is transforming the library systems and the way in which we view information sources. The idea of library as a place is being questioned now. Librarians are forced to learn to organize and manage systems that find out and provide access to information kept elsewhere. Personal computers are now usually part of a network of computers and often part of a network of networks spanning the globe. Internet provides instant access to billions of information sources which includes books, reports, journals, video films and topics ranging from ameba to Zend Avesta and economic indicators to government regulations. The librarians and information professionals have a vital role to play in bridging the information gap. The potential of internet based information sources can not be overemphasized in this context.

As internet is the most important place today to look for any type of information especially general reference sources. That is why the present study gives here a bird's eye view of the libraries and related cites on the internet which is useful for the information service professionals and second stage it will focus the operational perspective of internet in library and information services.

4.6.1 Amazon.com Books

It is ironic that one of the biggest successes on the Internet sells books a product that the medium was supposed to make obsolete. The bibliophilic web surfer may seem like a contradiction in terms, but Amazon.com boasts a grater selection of books than they other store in existence virtual or tangible. It is searchable through keyword, author, title or subject (www.amazon.com)

4.6.2 ALA American Library Association

The ALA Home Page provides ALA members and the public with information from and about ALA, as well as information about libraries and librarianship from other sources (www. benedict.com/index.html)

4.6.3 American Memory Project

American Memory Project from the Library of Congress contains sound recordings, prints and photographs. Primary source materials and archival materials relating to American culture are available the library's web server. American Memory Web pages can be reached via http://memory.loc.gov/ammem/index.html

4.6.4 Berkeley Public Library Online Reference

A truly awesome collection of resources are available in this site. Berkeley Public Library are excited to share news of new projects and services aimed at connecting with their community, to improve Berkeley Public Library services, resources and others. (http://www.berkeleypubliclibrary.org/services_and_resources/)

4.6.5 CARL

Colorado Alliances of Research Libraries (CARL) offers much more than just an online library catalogue of Colorado academic, public and special libraries. The CARL uncover document delivery service is open to the public, offering a keyword index to over 17,000 magazines and journals. http://www.coalliance.org/

4.6.6 Chicago Public Library:

This Chicago Public Library (CPL) experimental World Wide Web server was created as part of a LSCA grant for building public access to the internet. It is available at the Harold Washington Library Center's Government Publication Department and six neighborhood libraries. www.cpl.lib.uic.edu

4.6.7 Internet Public Library (ILP)

IPL is a public service organization and a learning/teaching environment. To date, thousands of students and volunteer library and information science professionals have been involved in answering reference questions for our Ask an IPL Librarian service and in designing, building, creating and maintaining the IPL's collections. It is through the efforts of these students and volunteers that the IPL continues to thrive to this day. In January 2010, the website "ipl2: information you can trust" was launched, merging the collections of

resources from the Internet Public Library (IPL) and the Librarians' Internet Index (LII) websites. http://www.ipl.org/div/about/

4.6.8 Hot Paper Topics

An Alphabetical listing of suggested paper topics, and each topic is linked to sites on the Web where information on the topic can be found. http://www.sau.edu/

4.6.9 Info Zone: Research Skills Area

This site explains the process of doing research through, each step and providing is along the way. http://www.brnet.mb.ca

4.6.10 iLibrarian

The Wilton Library Association has put together a list of Innovative Internet Applications in Libraries. This quick guide provides links to nearly 200 inspirational library websites in the following categories: Ages & Stages, Book and Reading Lists, E-Journals, Local Databases, "My Library" Personalized Interfaces, Newsletters, Blogs & Wikis, Site News & Evaluation, Special Collections & Online Exhibits, Tutorials/Guides, Virtual Reference Desks, Virtual Tours, Web Forms and miscellaneous (http://oedb.org/blogs/ilibrarian/)

4.6.11 LC Marvel

The Library of Congress Machine-Assisted Realization of the Virtual Electronic Library (MARVEL) is a Campus-Wide Information System that combines the vast amounts of information available about the Library with easy access to diverse electronic resources over Internet. Its goal is to serve constituents throughout the world and Congress as well as staff of LC. http://www.loc.gov/loc/lcib/93/9316/marvel.html

4.6.12 Library of Congress

The Library of Congress is the nation's oldest federal cultural institution and serves as the research arm of Congress. It is also the largest library in the world, with millions of books, recordings, photographs, maps and manuscripts in its collections.

4.6.13 Why Files

It is a general library online which delivers the science behind the news. The why files does just than in remarkably clear fashion for timely topics as diverse as cloning and violence.

4.6.14 WWW Virtual library

The WWW Virtual Library (VL) is the oldest catalogue of the Web, started by Tim Berners-Lee, the creator of HTML and of the Web itself, in 1991 at CERN in Geneva. Unlike commercial catalogues, it is run by a loose confederation of volunteers, who compile pages

of key links for particular areas in which they are expert; even though it isn't the biggest index of the Web, the VL pages are widely recognized as being amongst the highest-quality guides to particular sections of the Web. Individual indexes live on hundreds of different servers around the world. A set of catalogue pages linking these pages is maintained at http://vlib.org/

4.7 Impact of internet in library and information services

Perhaps no other recent innovation has impacted the library profession to such a great extent as Internet. Not only is our world becoming an interconnected global community, but this early use of the Internet has changed the fundamental roles, paradigms, and organizational culture of libraries and librarians as well, which created profound impact on L&IS by offering new modes of information delivery and a vast information source. There is a continuing evolution of the roles and functions of libraries and librarians, which appears to parallel the growth of acceptance and use of the Internet by library professionals. The innovative use of Internet technologies enable us to reach both local and distant users much more easily and effectively than hither to possible. Technologies such as email and Web provide tremendous opportunities for library & Inf. Scientists to deliver the information to the desktops of our users. Web offers significant advantage by integrating different library & information services with a common user interface offered by Web browsers. Realizing the potentials, many libraries are rushing to getting the connectivity.

Libraries accessing wealth of Internet information sources will ensure improvement and expansion of information services to their users. Internet helps in various activities of library and enhances its effectiveness and efficiency. The Internet has made possible the whole process of generation and manipulation cheaper and instantaneous. It has profound impact on various library and information functions and services such as collection development, acquisition, technical processing, circulation, ILL, OPAC, document delivery services, reference services, CAS, SDI, library professionals, users, user education and marketing of library services etc. The following listing will give an idea of which various functions of libraries may take advantage from Internet and Web technologies.

4.7.1 Acquisition: Librarians can have easy and quick access to the suppliers of books, journals and electronic publication through Internet. Major publishers and bookshops have set up their websites on the Internet. These websites give detailed information about their

publications which may include book review, abstracts, annotation, price etc. The major functions of Internet based acquisitions are;

- Correspondence with Book seller & Publisher.
- Reminders, Price verification
- Biblographic details and downloading of bibliographic records etc
- Ordering, billing.

Some of these sites are

◈ Amazon.com and Barnes and Noble advertise themselves as the world's largest online bookshops.

◈ IBS (Internet Book Shop) Bookshop Co., UK, claims to be the Europe's largest online bookshop.

◈ D.K Agencies is an online bookshop of Indian books which stocks and distributes most of the Indians books.

4.7.2 Technical processing

Internet provides access to publisher's catalogues and OPACs of large libraries like Library of Congress, British Library, etc. OPACs become a popular source of bibliography and cataloguing information through Internet. Libraries can scan these catalogues and download bibliographic data required for technical processing of books into their local catalogue. It is also offers access to Dewey summaries for classification and organization of resources efficiently through the Dewey home page. It includes the following operations of cataloguing classification and circulation.

4.7.2.1 Classification

- Network resources (in place of conventional sources)
  a. available on the net
  b. subscribed or free or trial basis
- Dewey Online
- Maths. Classification System
- Engineering Electronics Lib. Classification
- Search engines – such as yahoo use DDC

4.7.2.2 Cataloguing

- Cataloguing of network resources

- Online Catalogues
- WorldCat (OCLC)
- WebOPAC – web sites
- MARC adds 856 field
- OCLC Scorpian project- MARC & AACR2
- Metadata standards- Dublin core

4.7.2.3 Circulation:

- Remote login
- Status check
- OPAC access
- Reminder to users
- User requests
- Direct borrowing and ILL

4.7.3 Resource Sharing: Internet is a great way of resource sharing at the present time. It is strongly felt that IT / Internet technologies can enable, empower and enrich libraries astoundingly in information resource building and in resource sharing. It covers the following activities.

- Union Catalogue
- Access, adding, downloading
- Access to databases over networks
- Ohionet, ILLINET, WLN, OCLC, BID, (UK)
- Full text journals access etc

4.7.4 Services: Internet is providing the following services respectively for the library users and others category of users in libraries.

- ILL (Inter Library Loan)
- Document Delivery Service e.g. Ariel
- Reference / Information Services
- Virtual Reference service (Using Meebo)
- CAS (a) Recent additions (b) Contents pages
- SDI (a) From library collections (Lib. catalogues) (b) Databases (c) Internet sources
- OPAC (Online Public Access Catalogue)

➤ Database access (a) Bibliographical (b) Full text (c) Many vendors & organizations are moving to Internet (web) access.

➤ Table of Contents Services: Most of the publishers of electronic journals on the Internet provide table of contents services to users on the Internet.

4.7.5 Subject Lists/ Gateways (With their own Search engines)

➤ Internet Public Library (University of Michigan)

➤ EEVL – Engineering

➤ SOSIG – Social Science

➤ OMNI- Medical

➤ ADAM – Arts, Design etc

4.7.6 User Education: Because of huge Internet resources, librarians have to provide intensive training in searching methods of various Internet databases for the effective utilization of global electronic products and services. Now libraries can set up website and provide a wide range of information pertaining to library sections, functions, collections, staff membership, rules, services etc to the local as well as non-local users. Online user education program can be provided to users through libraries homepage.

4.7.7 Preservation & Storage:

The Internet is also a medium for the preservation and storage of information. In past, libraries were seen as the main storage facility of information. As society becomes increasingly more digital and more information resides on the Internet the focus on storage and preservation is shifting. For example, some academic libraries are now faced with the problem of whether or not to purchase serials that can be just as easily accessed on line. Preservation of these same media also becomes an issue of economics, not the "just in case" preservation ideology of the past paradigm. Co joined to the function preservation is the destruction of Information. Because the Internet can be seen as a medium for preserving information, the process of destruction of information also is affected. As more and more information is created and stored on the Internet, the capacity to store this information is also decreasing.

4.7.8 Library professionals

The Internet has increased the role of librarian and has made the librarian to act as navigator, consultant, facilitator and evaluator of global intellectual resources. Pressure is increasing on librarians to cope up with these new challenges and changing users' needs. Library staffs are

undergoing Internet training programmes to keep pace with the new technologies and to satisfy the growing complex information needs of user (Venkataramana, 2007).

4.7.9 Resources available on the internet

Internet is a storehouse of world's information resources. It has become an effective means of enriching and updating the information resources of libraries. It helps in building information sources in libraries in more accessible from and in most economy way. Internet has become viable components to the library; information sources on the internet supplement the in-house collection in libraries.

There is an enormous growth in the number of websites on the net providing access to various information sources. As information professionals, we can arrange the sources on net as we come across, in a structured manner. These can be; e-journals, e-books, Standards, e-TDs, preprints, library catalogue, bibliographical tools, share wares, old books, news papers, dictionaries, magazines, encyclopedias, databases, directories, films, maps, technical reports, audio/video, proceedings, patents, websites of companies, Institutions, organizations and associations etc. Librarians must strive to make use of these vast, growing Internet-based information sources to meet changing information needs of users. Some of these are discussed in brief:

4.7.9.1 Cataloguing of Internet sources: Cataloguing of Internet sources relevant to the topic is of great use in searching and retrieving the required information. Initially, librarian has to define the scope of library's parent organization's information needs. Then, with the help of search engines, he needs to constantly browse the Internet and prepare catalogue of frequently used websites.

4.7.9.2: Online Public Access Catalogues (OPACs): Many libraries in developed countries have created OPACs, accessible at their premises as well as through Internet Some of the examples are: OPACs of British Library, Library of Congress, Online Computer Library Center, Bath Information and Data services etc.

4.7.9.3: Electronic journals: Internet has become an effective medium for publishing electronic versions of current journals. Electronic journals are accessible much faster than their printed documents. Major publishers are using Internet and web as a global way offering their journals to the international community. Some of the prominent publishers are offering e-journals. Such as Elsvier, Sage, Emerald, Springer and so on.

4.7.9.4: References sources: Many publishers of various references sources have posted their webpages on the net. The important references such as encyclopedias, dictionaries, thesaurus, handbooks, yearbooks, guides etc are accessible on time on the Internet.

4.7.9.5 Discussion forums: A large number of discussion groups on a variety of subjects are now available on the Internet. These are valuable forums to participate in discussion on current issues and share /exchange ideas, views and experiences in their respective fields. These forums enable researchers to keep pace with the latest developments in their respective areas of research.

4.7.10 Website for a library

The roles of libraries and the Internet in providing information in the 21st century are firmly intertwined. It behooves any librarian working today to understand not only how to find things on the World Wide Web, but to have a basic understanding of how it works. Librarians will be called on to become information architects, to be able to create Web sites with clearly stated goals, which are aesthetically pleasing and filled with relevant content and functionality. As more and more libraries set up comprehensive Web sites, there becomes an increasing demand for librarians who have an understanding of HTML, as well as other types of Internet programming skills such as javascript, SQL, CGI, ASP, and Cold Fusion. Librarians should know the principles of setting up an efficient information resource. As the Internet becomes more interactive, there is a push toward making databases accessible online; the best example of this is the library card catalog. Other interactive options include e-mail and bulletin board service, and moving from CD-ROMs to online subscriptions. A library web site is not merely establishing a presence on the Internet. It can be a virtual addition to the existing library structure, reaching out to patrons around the clock and providing valuable information resources. Additionally, a library's Web site is an important source of information about the library. The library's Internet policies, special programming, and new materials can all be made viewable at any time from the Web site. Libraries, too, should be designing their own Web sites that serve as portals to interesting sites that have been reviewed and annotated by professional librarians. Librarians will continue to play an important role as information professionals in the Information age, well into the 21st century.

4.7.11 Marketing of library services

In recent years, libraries of all types from all countries have found it necessary to compete for both money and clients as major changes have occurred. The Internet brings a whole new dimension of competition that public, academic, and special libraries are facing daily. Whereas budget problems have been around for some time, the recent competition from the Internet can translate into fewer users, despite the fact that the Internet is also a crucial tool used by librarians for research and marketing. Because of all of these existing challenges and intensifying changes at least a handful of libraries have turned to "tried and true" business models for improved planning and development, and that they are employing marketing plans as one method for moving forward. As time goes on, libraries must think about marketing of their services and resources to achieve goals. It is important to clarify what marketing means in a library environment. Marketing is not so much about "selling" information products to researchers, as it is more about spreading the word about potentially useful new tools. It is also about keeping users informed about library activities and involving them in collection development. It is more about integrating new research tools into existing, effective research processes, and in some way enhancing researchers' work, rather than selling the tool to users as an end in itself. As librarians market new tools, they should know how the tools may offer clarity, and not simply contribute to noise for the users. Effective marketing can only occur when librarians understand, at least in a broad sense, what the scientists, professors, and graduate students are already doing to keep informed, and what their research projects are about

4.7.12 Conclusion

The changing roles of librarians, as facilitated by the use of the Internet, should be of great concern to the profession. There are three major areas, which should be addressed by the information profession to meet the challenges of these changes:

1 Because the Internet provides library users with a vast array if seemingly accurate information librarians will need to increasingly adopt the role of teacher or guide. Users will not only need to learn how to best access information, they will also need to be taught to critically evaluate Internet resources to determine their validity. Librarians can and will need to provide this guidance.

2 Library professionals will need to address the issues of information organization and retrieval via the Internet. Librarians should remain proactive in dealing with policy and

procedural issues concerning organization and access. In this way, the Internet of the information retrieved by library users can be ensured.

3 Library professionals should embrace the changes confronting them. Radical shifts in traditional ideas of service need not occur. Library professions do, however, need to remain flexible and open to the potentials the Internet can have for the profession and for library users. Internet access should instead be seen as a means to augment information access for users. Library professional who embrace this new environment of collaboration will be better able to provide customized service to their clients. There is no crystal ball that can predict the future of the library or the impact the Internet has and will continue to have on libraries and librarians. However, as, long as library professionals never lose sight of their mission and purpose to serve library users in the best possible manner, there will always be a place for librarians and libraries—virtual or not. It is also fair to suggest that further research is needed to assess the impact the Internet has upon library professionals, so that we may enable all librarians to prepare for the future.

Chapter Five

Internet Scenario in Bangladesh: Present Status of Some Selected Higher Academic Institutional Libraries.

5.1 Introduction

The pioneering and bold computer magazine of Bangladesh, The Monthly Computer Jagat, expressed its deep concerns regarding Internet access in the country in its July 1996 issue. In an editorial it stated, "Revolutions have been created round the world to use Internet for extension of knowledge, scientific activities and education. But, in Bangladesh we have no such initiative to provide Internet access to the educational institutions. Even most prestigious higher institutions like University of Dhaka and Bangladesh University of Engineering & Technology (BUET) are beyond its reach (Computer Jagat, 1996). Online Internet was legalized in the country on 4 June 1996 and the same day one Internet service provider (ISP), the Information Services Network (ISN), started work. Within one and a half months, Grameen CyberNet started service on 15 July 1996 (Chowdhury, 1996). At about the same time, two other off-line providers went online by taking leased lines from the major providers. Very recently two big nongovernmental organizations (NGOs) started online Internet service. But despite the presence of so many ISPs, Internet access is largely underutilized. All the ISPs are capital city based with no immediate plans to extend services outside Dhaka. Moreover, subscribers mainly use the e-mail facilities of Internet, with little Web browsing or newsgroup reading. This regrettable situation has led the authors to conduct a situation analysis study.

5.2 Present Internet scenarios in Bangladesh

Bangladesh, located in South Asia, bordering the Bay of Bengal, between India and Myanmar, is one of the overpopulated, underdeveloped and technologically backward countries in the world. Like other developing countries, Bangladesh was late in introducing Internet technology. The Internet came in Bangladesh through UUCP (Unix-to-Unix copy) email connectivity in 1993 by Pradesta Ltd. and IP (Internet Protocol) connectivity in 1996 (Rahman, 2002). Online Internet service began in June 1996, when VSAT (Very Small Aperture Terminal) was legalized to operate as Internet Service Provider (ISP) in the country's private sector. In the last few years it has grown dramatically, although obviously

from a very low base. With an estimated Internet user-base of more than 600,000 by 2010, representing only a 0.4% user penetration, the local Internet industry has been preparing to move into the next stage of its development. Since then, there has been much talk about the use of Internet in industry, business, communication, education, research, and in every other sphere of life. But the Internet penetration rate in Bangladesh is as low as 1.1%, compared to Thailand 27.4%, Maldives 27.2%, Vietnam 32.3%, India 8.4%, Pakistan 10.9%, and Sri Lanka 8.3%. Internet users in the world distribution by world regions as Asia 44%, Europe 22.7%, North America 13%, Lat. America 10.3%, Africa 5.7%, Middle East 3.3%, Ocean/Australia 1.0%. At present in Bangladesh total Internet users as of June' 11 1,735,020 (Internet World Stats, 2011). Although broadband Internet services remain very low in Bangladesh, following the granting of a number of WiMAX licences in 2008, there was considerable optimism that this is about to change as WiMAX networks were being rolled out.

5.3 Impact of the Internet in Bangladesh

Although it could do much more, still availability of online Internet service is making significant positive changes in the country. The benefits for business communications, both with respect to cost savings and speed, are noteworthy. Families with members staying abroad are welcoming the Internet for frequent and cheaper communication. Researchers are getting valuable information quickly at modest cost, which was not possible before. A multinational company source stated that the company's monthly e-mail bill has been reduced to less than US $275 from US $2,500 after the transformation of the Internet access system from international dialing to VSAT. The company would never consider such communications over faxes or phones. Other business houses and entertainment stars are gradually coming to accept the Internet as their ultimate communication tool. The ISPs are carrying out special promotional activities to provide Web page services. A new social class is being created, mainly amongst the young generation who find the Internet an effective tool for their career development and the globalization of their thoughts and creativity. Many Internet users have stated that a whole new world has been opened to them, they are getting a new source of knowledge, and they are also making relations with many good friends and organizations worldwide (Islam & Tsuji, 2011). But some say that going online is a very costly habit, which sometimes appears as an addiction and causes a big waste of time. A group of young people, notably from the affluent section of the society, is abusing the

Internet by using it mostly for entertainment, which is certainly not a healthy practice for a poor country like us. But the saddest news is that Bangladesh has yet to set up an academic network to provide Internet access to the large number of university teachers, students, scientists, and researchers who play vital roles in building a better nation.

5.4 Brief description of the selected academic university libraries in Bangladesh

The higher academic institutions of a country are pioneers in adopting and using Information and Communication Technologies (ICTs). At present, there are 31 public and 53 government approved private universities in Bangladesh, and many of them have Internet access. A survey of the ICT-based library activities of these selected academic libraries in Bangladesh was conducted. Brief discussions of these academic libraries are discussed below.

5.4.1 Dhaka University

On the first day of July 1921 the University of Dhaka opened its doors to students with Sir P.J. Hartog as the first Vice-Chancellor of the University. The University was set up in a picturesque part of the city known as Ramna on 600 acres of land. The University started its activities with 3 Faculties, 12 Departments, 60 teachers, 877 students and 3 dormitories (Halls of Residence) for the students. At present the University consists of 13 Faculties, 66 Departments, 8 Institutes, 17 dormitories, 3 hostels and more than 35 Research Centers. The number of students and teachers has risen to about 33,112 and 1,805 respectively. At present the university is the largest and oldest university in Bangladesh. (DUAC, 2010).

5.4.1.1 Dhaka University Library

The Dhaka University Library started as a part of the Dhaka University on the 1st of July, 1921 with 18,000 books inherited from the libraries of the former Dhaka College and Dhaka Law College. F.C. Turner, the former principal of Dhaka College was the first librarian of the Dhaka University Library and Fakhruddin Ahmed succeeded him in the post in 1922. At present the Dhaka University Library has 6 lacs 80 thousand books and magazines. Besides that the Library has 30,000 rare manuscript; 20,000 old and rare books and large number of Tracts (booklets, leaflets, pamphlets, and puthis). Some rare books and documents have also been collected in microform. In the same way, rare books and reports, puthis, Bengali Tracts and private collection of Buchanan on Bengal have been acquired from the British museum. The library reader's service is open from Saturday to Friday. The Library remains open from Saturday to Wednesday at 8 am to 9pm. On Thursday the Library remains open from 8 am to 5 pm and on Friday at 3.00 pm to 8 pm. The library offers the following services; reading

room facilities, book lending facilities, online public access catalogue, digital borrower's ID card, Internet facilities, reference services, journal/Online Journal and news paper facilities, reprographic facilities like photocopy, microfilm and CD and resource center for sight savers.

5.4.1.2 Dhaka University Library Online Resources

Dhaka University Library provides a wide range of scholarly electronic resources, but for licensing reasons, these are to be restricted with some downloading rules. These digital resources are licensed for the non-profit educational use of the University of Dhaka. Use of these resources is governed by copyright law and individual license agreements. Systematic downloading, distributing, or retaining substantial portions of information is prohibited.

5.4.1.3 Electronic journals and e-books available at University of Dhaka through Bangladesh INASP-PERI Consortium (BIPC).

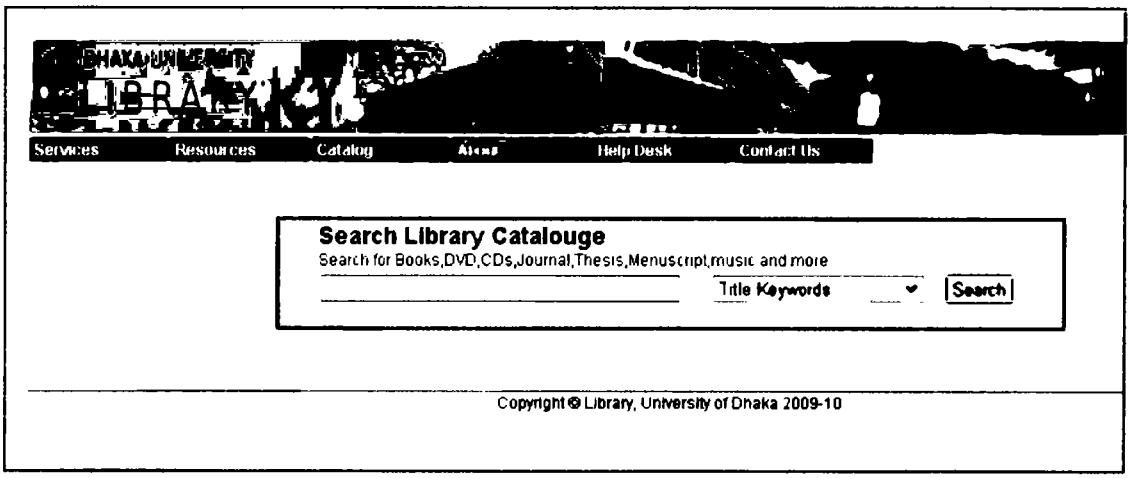
Table 3: Online resources of Dhaka University Library

Type of e-resources	Name of e-books, journals and publisher
E-book	Taylor & Francis E-Books, Agropedia or Europa World Plus
E-book	Taylor & Francis E-Books, Agropedia or Europa World Plus
Online Journals	Acoustical Society of America
	American Astronomical Society
	American Chemical Society
	American Institute of Physics
	American Physical Society
	American Society of Civil Engineers
	Annual Review
	Beech Tree Publishing
	Cambridge University Press - Cambridge Journals Online
	The Cochrane Library
	De Gruyter
	EBSCO Host
	Geological Society
	Institute of Electrical and Electronics Engineers (IEEE) Xplore
	Institute of Physics (IOP Publishing)
	International Forestry Review - Commonwealth Forestry Association
	Mary Ann Liebert
	Nature Publishing Group (NPG)
	NRC Research Press Journals Online
	OSA - Optical Society of America
	Oxford University Press - Oxford Journals
	Palgrave Macmillan Journals
	Policy Press
	Professional Engineering Publishing
	Project MUSE

	Royal College of Physicians
	Royal Society - Royal Society Journals Online
	SPIE Digital Library (Online journals and conference proceedings)
	Springer
	Symposium Journals
	University of California Press - Caliber
	University of Chicago Press
	Wiley-Blackwell - former Interscience content
	HINARI(Health InterNetwork Access to Research Initiative)
	AGORA(Access to Global Online Research in Agriculture)
	Wiley-Blackwell - former Synergy content
	OARE(Online Access to Research in the Environment)
	eJDSweb
	World Bank eLibrary
Open Access Journals	Bangladesh Journals Online
	Directory of open access journals

Source: http://interim.library.univdhaka.edu/journal/

Figure 2: Search OPAC by Keywords

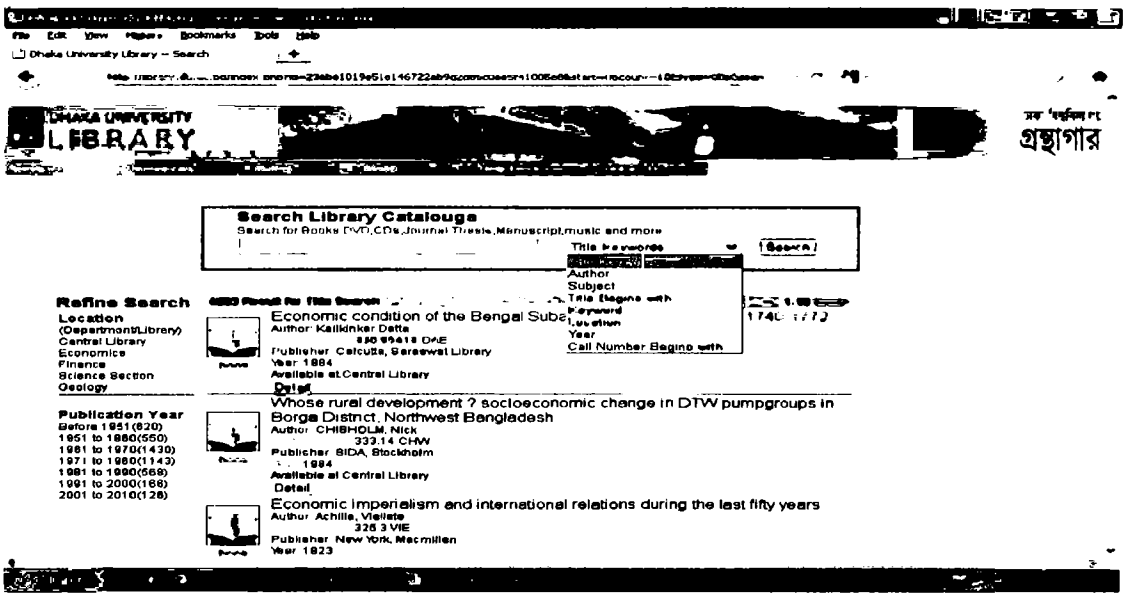


Source: http://library.du.ac.bd/

5.4.1.4 Dhaka University OPAC:

In Dhaka University library website, services, resources, catalogue, about, helpdesk and contact us links are not activated as initially they are working on it. Only the search library catalogue is performing accordingly. In case of OPAC using, user can search the desired information by putting their desired query. In OPAC features there are not advanced search facilities and these all are in general search category. The keywords are relating to title, author, subject, location, year and call number begins with others. The OPAC is used for searching books, DVD, CDs, journal, thesis, manuscript, music and more. The search result shows the all bibliographical items of the resources.

Figure 3: OPAC search result



Source: http://library.du.ac.bd

5.4.2 BUET

Bangladesh University of Engineering and Technology (BUET) is one of the most prestigious institutions for higher studies in the country. About 5500 students are pursuing undergraduate and postgraduate studies in engineering, architecture, planning and science in this institution. At present, BUET has sixteen teaching departments under five faculties and it has three institutes. Every year the intake of undergraduate students is around 900, while the intake of graduate students in Masters and PhD programs is around 1000. A total of about five hundred teachers are teaching in these departments and institutes. BUET is the oldest institution for the study of Engineering and Architecture in Bangladesh. The history of this institution dates back to the days of Dhaka Survey School which was established at Nalgola, in Old Dhaka in 1876 to train Surveyors for the then Government of Bengal of British India. As the years passed, the Survey School became the Ahsanullah School of Engineering offering three-year diploma courses in Civil, Electrical and Mechanical Engineering. In recognition of the generous financial contribution from the then Nawab of Dhaka, it was named after his father Khawja Ahsanullah. It moved to its present premises in 1912. In 1947, the School was upgraded to Ahsanullah Engineering College as a Faculty of Engineering under the University of Dhaka, offering four-year bachelor's courses in Civil,

Electrical, Mechanical, Chemical and Metallurgical Engineering. In order to create facilities for postgraduate studies and research, Ahsanullah Engineering College was upgraded to the status of a University in 1962 and was named East Pakistan University of Engineering and Technology. After the war of Liberation in 1971, Bangladesh became an independent state and the university was renamed as the Bangladesh University of Engineering and Technology. Till today, it has produced around 25,000 graduates in different branches of engineering and architecture, and has established a good reputation all over the world for the quality of its graduates, many of whom have excelled in their profession in different parts of the globe. It was able to attract students from countries like India, Nepal, Iran, Jordan, Malaysia, Sri Lanka, Pakistan and Palestine.

5.4.2.1 BUET Library and resources

The BUET Central Library has its own separate building approximately 20,000 square feet in space and is in close vicinity to the other academic buildings. The library hosts a vast and diverse collection of books, journals, monograms and periodicals of academic interest. It also includes a free internet browsing facility to facilitate research and academic activities of students and faculty members. The library has a collection of 1,42,913 items of information materials of which 1,25,066 and 17,847 are books and bound periodicals respectively and 141 titles are in the current subscription list of journals. The library is fully automated along with web site provision www.buet.ac.bd/library/.

5.4.2.2 BUET Library Facilities

The Library, unique in character in the country provides the following educational and research facilities to the students and teachers of this university:

Reading Facility: The reading room can accommodate 200 students at a time to provide reading facilities of rare and out of print books, ready reference and prescribed textbooks.

Reference, Periodicals and Research Facility: The facilities available here include inter alias document delivery, current awareness service, preparation of directories, indexes and abstracts, and bibliographies of various types, user orientation, literature searches, guide and preparation of report for researchers and advice and problem solving of individual inquires.

Reprographic Facility: The library provides reproduction facilities of articles, part of rare and out of print textbooks and other published materials at a very nominal fees to meet the research and educational needs of both the students & teachers.

Rental Facility: The Rental library provides textbooks of foreign origin to the students for one academic session on rental basis through payment of nominal fees at the rate of 10% of the total cost of the original price of the book. This helps the students in gaining access to the textbooks of all types.

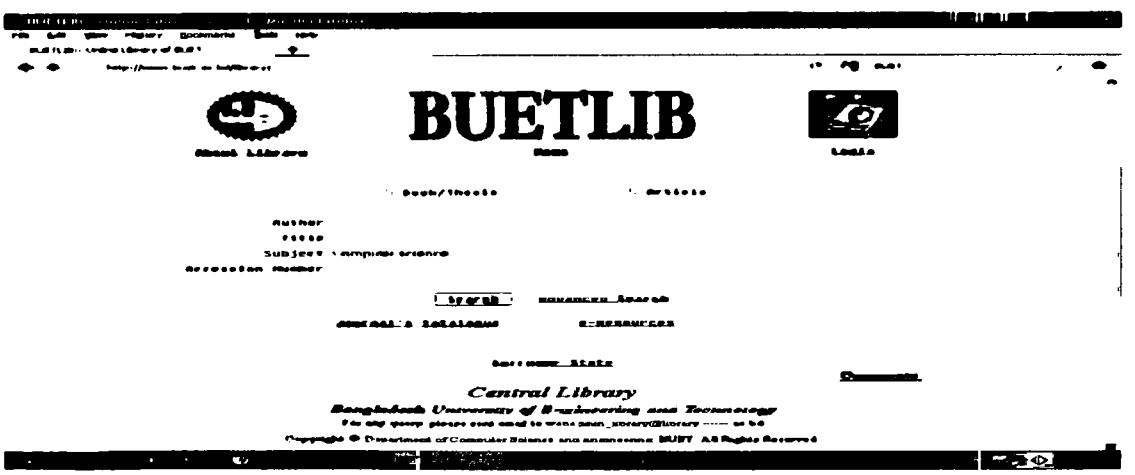
Lending Facility: Borrowing facilities are extended to all members of the university including students of both graduate and post-graduate levels. Inter-library loan facilities are also available.

Browsing Facility: Both undergraduate and post-graduate students are eligible to use internet for two hours at a time on production of their valid ID cards along with user name and password obtainable from IICT. There are 42 PCs available for this purpose.

5.4.2.3 BUET OPAC

BUETLIB is automated library software used by the BUET library. In BUET OPAC, it has the following features. User can browse the book, article through author, title, subject and accession number. In the interface, there are two options for retrieving the information, namely search and advanced search. In the OPAC feature, it is also included journal catalogue, e-resources, borrower state and comments parts for the users.

Figure 4: BUET OPAC



Source: http://www.buet.ac.bd/library/

In journal catalogue, it covers the link of journals which are arranged alphabetically. Users can acquire the desired collection accordingly by using their ID and given password. In case of e-resources which are classified in BUET library, these are categorically arranged as subscribed e-resources, Bangladesh-INASP-PERI Consortium (BIPC) and free e-resources. These are listed below;

Table 4: BUET Library e-resources

Type of e-resources	Name of e-books, journals and publisher
Subscribed Bangladesh-INASP-PERI Consortium (BIPC)	Science Direct (Elsevier)
	Acoustical Society of America Digital Library
	American Astronomical Society
	American Chemical Society
	American Institute of Physics
	American Physical Society
	American Society of Civil Engineers
	Annual Reviews
	Beech Tree Publishing
	Blackwell Publishing - Synergy
	The British Psychological Society
	Cambridge University Press
	DE GRUYTER
	EBSCO Host
	The Geological Society
	Institute of Electrical & Electronics Engineering
	Institute of Physics Publishing
	International Forestry Review
	Multilingual Matters & Channel View Publications
	NRC Research Press
	Optical Society of America
	Professional Engineering Publishing
	Project Muse
	The Policy Press
	SPIE Digital Library
	Springer
	Symposium Journals
	University of Chicago Press
	Wiley Inter Science - John Wiley and Sons
	The World Bank
Open Access Journal	Bangladesh Journals OnLine - BanglaJOL
	Directory Open Access Journal
	Journal of Civil Engineering

Source: http://www.buet.ac.bd/library/Web/e-Journals.htm

5.4.3 Sher-e-Bangla Agricultural University

Sher-e-Bangla Agricultural University (SAU) is located in the heart of the capital city, Dhaka with an excellent public transportation facilities to reach the university. The SAU campus stands on 86.92 acres (35.19 ha) of picturesque land covered by green plantations. The "Sher-e-Bangla Agricultural University Act 2001" was passed in the national Parliament on 09 July 2001. Nearly 5700 graduates plus 598 postgraduates have so far been produced by

the Sher-e-Bangla Agricultural University. Graduates of this University have been playing pioneer role in the development of agricultural system and agro-based economy of the country. They are involved in various national and international services ranging from civil service to UN assignments including UN peace keeping forces. Presently about 2000 undergraduate and postgraduate students are enrolled in this University and are taught by a total of 149 teachers. The Sher-e-Bangla Agricultural University was established for the expansion of higher agricultural education and committed to promote research in various fields of agricultural sciences and to offer extension services. A number of research projects have been undertaken by the different departments of the University. It has made a significant progress towards commencing collaborative research programmes with some foreign universities.

5.4.3.1 Sher-e-Bangla Agricultural University (SAU) Library

The Sher-e-Bangla Agricultural University (SAU) Library is plying an important role to meet the demands of the students, teachers, officials and other concerned persons since it is an academic library, all our efforts are directed towards measures to satisfy the needs of its students and teachers. The main features of Sher-e-Bangla Agricultural University (SAU) Library may be described below:

5.4.3.2 Physical facilities:

SAU library is situated at the 1st floor of its academic building. Total area of the library is about 1,500 square feet. At least 100 students can take their seats at a time in its beautiful reading room. Separate sitting arrangements are there for teacher's researchers and outside users are also given special treatment.

5.4.3.3 Collections:

There are 40,000 books & more then 100 titles of journals, research reports, research monographs in the library at present. Library has so many important reference materials such as encyclopedias, dictionaries, world almanac, world earners, world of learning Banglapedia (Bangla & English) version, Statistical Yearbook, Population Census etc. are in our collection, our target is to enrich the library with full volume.

5.4.3.4 E-resources:

SAU Library provides some pathway to have access to the digital world to get the necessary resources via Internet browsing. There are different electronic resources like online Journals, periodicals, books, articles etc. available over the internet. Some information resources are freely accessible for the consumers. Following sites of information resources are now available for free access. To access the following website password is required: if needed, users are requested contact with the Documentation Officer of the library to know the password.

5.4.3.5 Future Plan:

In order to render better services SAU library has some plans. These are as follows:

i. An open shelve system will be introduced for the students and teachers very soon so that the students and teachers themselves can easily find out their necessary resource with the help of library personnel.

ii. The library will be recognized into seven sections i.e. Acquisition, Processing, Circulation, Reference, Cyber, Documentation and Audio-Visual Sections.

iii. Automation system in the library will be introduced so that the users get their resource accurately and immediately.

5.4.4 East-West University

The idea of establishing a private university to provide quality education at an affordable cost in Bangladesh was first mooted by a group of prominent academics. After being accorded permission by the Government under the Private University Act (Act 34) of 1992, East West University was launched in 1996. In keeping with its name, East West University, rated among the top private universities of Bangladesh, is an institution that promotes eastern culture and values, and meaningfully blends eastern and western thought and innovation. s an institution of higher learning that promotes and inculcates ethical standards, values and norms, East West University (EWU) is committed to the ideals of equal opportunity, transparency, and non-discrimination. The primary mission of EWU is to provide, at a reasonable cost, tertiary education characterized by academic excellence in a range of subjects that are particularly relevant to current and anticipated societal needs.

5.4.4.1 East-West university library

East West University Library's mission is to support the university community in developing skills in innovative and analytical thinking in research and in information literacy, and by

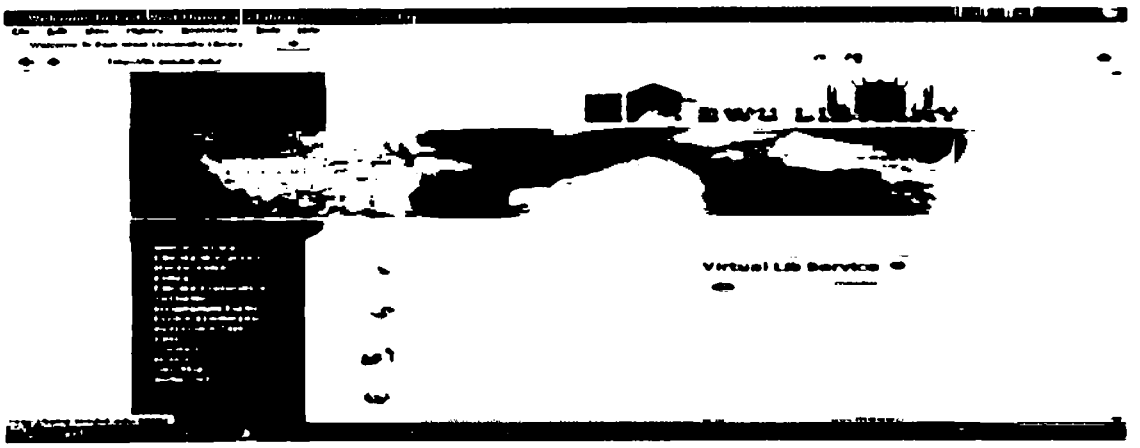
providing distinctive collections, services, facilities and programs. Professionally trained personnel are responsible for the care of EWU Library and its contents, including the selection, processing, and organization of materials and the delivery of information, instructions, and loan services to meet the needs of its users. The Library personnel are devoted to applying theory and technology to the creation, selection, organization, management, preservation, dissemination, and utilization of collections of information in all formats and help to manage and mediate access to information that may exist only in electronic form.

5.4.4.2 General information: The Library has been completely automated. Features include issue/circulation based on barcodes as well as other useful features. The most exciting part of the automaton is the web component. Students and faculty members use the web module for study and research purposes. EWU Library is a corporate Member of British Council, Dhaka and the Archer K. Blood American Centre Library, Dhaka. Membership facilities like borrowing, online public access catalogue, photocopying services, reference services, internet access and access to online journals are available in the respective locations. For any assistance, members of EWU may contact the Librarian, EWU.

5.4.4.3 Users' guide: It includes all the relevant features of the library as library services, open or close shelf library, borrowing rules, library hours, memberships, types of library collection, function wise library sections and others.

5.4.4.4 Library services: East West University Library introduced "Virtual Library Service" on 18 July 2010. EWU library is providing the service only to faculty members of East West University. One Library officer is available to chat with EWU faculty members for any queries regarding library via instant message during Sunday-Thursday: 3:00pm to 5:00pm (BST). The faculty members can get the service through the EWU Library website directly. The service is also available from G-Talk, Yahoo messenger, MSN messenger. Through this service the faculty members will be able to get library related information and instant research assistance from anywhere. EWU Library is the first Library in Bangladesh providing such kind of services.

Figure 5: EWU Web-based library services



Source: http://lib.ewubd.edu

5.4.4.5 Online services: For addition to accommodating traditional books and journals, the EWU Library has one of the best online resource centers among private universities in Bangladesh. It subscribes to leading online Journals such as JSTOR (Journal Storage), and ACM (Association for Computing Machinery, facilities available only for individual faculty member). Besides, the Library can access to HINARI (Health Inter Network Access to Research Initiative), AGORA (Access to Global Online Research in Agriculture), OUP (Oxford University Press), and Highwire Press (Stanford University's free online journals site) journals. All users can find many electronic journals and access full-text articles of the above-mentioned databases.

5.4.4.6 Library facilities and services: East West University Library holds a unique place among private university libraries of the country. It provides an array of facilities to library users with the help of state-of-the-art techniques and technologies. EWU Library provides the following facilities for library users:

a) Three spacious floors house separate circulation and reserve and reference sections
b) Fully air-conditioned floors can accommodate more than 250 students at a time
c) Automated borrowing system
d) Open shelf access system, i.e. students and teachers have direct access to bookshelves
e) Faculty members can borrow books for the whole semester
f) Students can borrow CD-ROMs, audiocassettes, texts
g) Provide Current Awareness Service (CAS) and Selective Dissemination of Information (SDI) services

h) Ready reference and referral services

i) Photocopy services

j) News-clipping services on important subjects on a regular basis

k) Modern facilities such as computers, printers, electric typewriters, etc.

l) Newspaper corner and special collection corner i.e. UN corner

m) Library users can get back issues of newspapers up to the last one month

5.4.4.7 Web based Services: From Fall semester 2007, EWU library has introduced web-based library services. Users can now search our library resources from their homes. Moreover, borrowing status, library books' status, online journals' icon, and user's guide, are also available on the web. Users' are requested to search at http://www.ewubd.edu/ of EWU Library.

5.4.5 BRAC university

From a modest beginning almost thirty years ago, BRAC has today grown into one of the largest non-government development organizations in the world. In line with BRAC's continued support to education as a force of change and development, BRAC University has been established 2001 to provide a high quality of education to meet the demands of the modern age. The goal of the university is to provide an excellent broad based education with a focus on professional development for students, in order to equip them with the knowledge and skill necessary for leading the country in its quest for development. Along with this, the university provides an environment for faculty development in order to ensure a dynamic teaching environment. Faculty will be provided with an environment in which they can further their teaching skills and contribute to the creation of new knowledge by developing and using their research skills. At present the university is offering undergraduates, post graduates and post graduate diplomas.

5.4.5.1 BRAC university library

The Ayesha Abed Library at BRAC University aims to provide support for the university's learning, teaching and research activities. The library supports the instructional and research mission of the university through the development, organization and maintenance of on-site collections in multiple locations; access to off-site resources; personalized assistance in the use of library and information resources; and instruction on research strategies and tools. The Library's mission is to provide comprehensive resources and services in support of the research, teaching, and learning needs of the University community. Develop a world-class

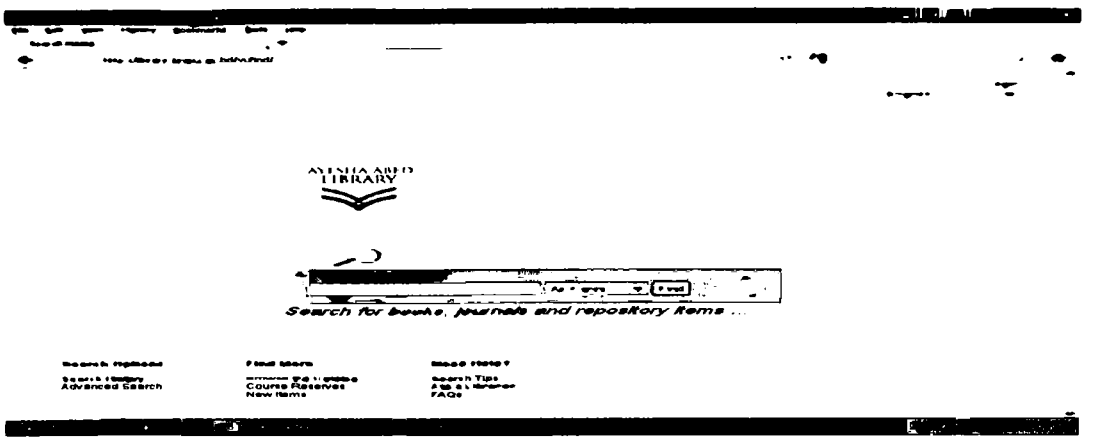
Knowledge Resource Centre and provide innovative new services and collections to the teaching, learning and research communities, using latest technological developments of 21st century. BRAC University library has the following web-based and traditional features for their valued users. Some of these are discussed.

5.4.5.2 Use policy, membership form and borrowing facilities: The library has a good policy of using library materials and other resources. All students are requested to follow these rules and regulation as all personal books; coats, jackets, bags, briefcases, umbrellas, etc. are to be kept in the pigeonhole near the security desk. In order to be a member of the library, online member forms are available for both the staff and students. All students, faculty and staffs of BRAC University and staffs of BRAC can enroll for membership at Ayesha Abed Library.

5.4.5.3 Library catalogue and online databases: BRAC University has OPAC (Online Public Access Catalogue) facilities and the user can search the catalogue, type one or more words in the search box. It has different search facilities including advanced search, browse by hierarchy, browse by subject, tag cloud, subject cloud and others. The online databases cover huge subject areas which are indexed (A-Z) alphabetically. Recently the library a new search interface which makes easy access to books, journals and repository items in at BRAC University Ayesha Abed Library. It includes everything in the classic catalogue, BRAC university institutional repository item, databases and e-journals, all in one search. The new search interface of BRAC University named as BRAC University VuFind which can be searched by title, author, subject, call number, ISBN/ISSN and tag. It is now working as one stop searching center for the users.

5.4.5.4 BRAC University Institutional Repository: The Digital Institutional Repository at BRAC University started in April, 2007. BRAC University is the first university in Bangladesh to establish a Digital Institutional Repository using open source software DSpace. The Digital Institutional Repository program is funded by the International Network for the Availability of Scientific Publications (INASP). This repository collects library collections, training program, BRAC University journal, prospectus, thesis, reports and different resources of different disciplines of BRAC University (Afroz, 2008).

Figure: 6 new interface of Ayesha Abed Library at BRAC University



Source: http://library.bracu.ac.bd/vufind/

5.4.5.5 BRACU LLC: It is one of the important steps taken by the library authority to making user empowered with information sources and services. This Library Learning Center offered lasses throughout the year. The main purpose is to acquaint students and faculties with the information sources, resources, and techniques to retrieve the resources. The BRACU library has a rich collection of resources which is continually expanding. Further, advances in computer technology are profoundly affecting nearly all sources as well as systems of access and use. Currently, the library strives to meet the information needs of the BRAC University community and to provide appropriate access to the faculty and students. In order to maximize the use of resources it is necessary to help users gain maximum benefit from information sources and systems. At this situation, an attempt has been taken to establish a BRACU Library Learning Resource Centre (LRC) which will help users gain maximum support from the library.

Chapter Six
Result and discussion of the study

The part of this study attempts to evaluate the existing Internet services of the selected higher academic institutional libraries, performance of the library professionals, needs, expectations of the users regarding Internet services and measure the impact of Internet in their different academic activities. The study has been prepared based on findings on questionnaire, interview results of librarians, library users as well as teaching faculty of the selected universities. The study was conducted on 5 leading public and private university libraries in Dhaka city. Three general as well as 2 specialized university libraries have been covered under this study. The overall findings of the survey are presented in the following two segments:

Section-1: Measuring the impact of Internet from user point-of-view. Here the users are both the students and teaching faculty of the higher academic institutions.

Section-2: This part focuses the impact of Internet from professionals' point of view. Here the professionals are those who are working at selected higher academic institutional libraries.

6.1 Institutional information

The study sampled the universities affiliated to the University Grants Commission of Bangladesh (UGC) as Dhaka University, Bangladesh University of Engineering and Technology, Sher-e-Bangla Agricultural University (i.e., government universities) and East West University, BRAC Univeristy (i.e., private universities). The table 5 shows the name of university libraries & other institutional information.

Table 5: Name of university libraries and their institutional information

Name	Type	Year of est.	Open (Per day)	Open (per week)
DU library	Public	1921	13.30 hours (Friday 5 hours)	7 days
BUET library	Public	1962	8 hours	5 days
SAU library	Public	2001	11 hours	5 days
EWU library	Private	1996	13.30 hours (Friday& Saturday 5 hrs	7 days
BRACU library	Private	2001	12 hours	6 days

Table 5 presents different information of the selected university libraries. This table compares type, year of establishments, working days and so on. It is apparent that, as compared to public university libraries, private university libraries have more working days

per week. The oldest university library is the Dhaka Univeristy library which has been established in 1921 and the newest are SAU and BRAC university library which have been established in 2001. The table also shows that opening hours per day of Dhaka and EWU library is the highest and others are almost similar. Besides this, it is showed that Dhaka and EWU library remain open on Friday while others are closed on Friday.

6.1.1 Library software and automation scenario

In the age of information explosion, libraries and information resource centers have become multimedia centers due to adoption of new technological devices and changing nature of their information storage, retrieval and services. During the last 25 years, the computer and telecommunication technologies began to build up an information society, which has crossed the geographical limitations and has provided facilities to access the global information systems. As a result library automation has become a vital issue in recent times. The present study focused on the automation scenario of the selected university libraries.

Table: 6 Software and automation scenarios

Name of university library	Category	Name of library software
DU Library	Partially automated	GLAS
BUET Library	Partially automated	BUETLIB
SAU Library	No	Local developer produced
EWU Library	Yes	OSS/KOHA
BRAC University Library	Yes	OSS/KOHA

Table 6 shows that only two university libraries namely EWU and BRAC university library are fully automated and DU and BUET library are partially automated as they are now in upgrading stage to library automation. In SAU library, they are lagging far behind in automation as the university library is newly established. For creating and maintaining their resource database, surveyed libraries use different types of software. Some of the libraries use locally-developed software, but most use OSS (Open Source Software) KOHA software. BUET library is using locally developed BUETLIB software which is designed by their internal programmers. In Dhaka Univeristy library, GLAS (Graphical Library Automation Software) was used previously, but its use has now been discontinued and a locally developed software is now being used. However, the automation process has not yet completed.

6.1.2 ICT based library activities

University libraries in the survey use ICT in activities such as data processing, communication, circulation, cataloguing, bibliography, serials control, and creation of an in-house database.

Table 7: ICT based library operations

Name of activities	DUL	BUETL	SAUL	EWUL	BRACUL
Data Processing	Yes	Yes	Yes	Yes	Yes
Communication	Yes	Yes	Yes	Yes	Yes
Acquisition	No	No	No	Yes	Yes
Cataloguing	Yes	Yes	Yes	Yes	Yes
Circulation	No	Yes	No	Yes	Yes
Serial Control	No	Yes	No	Yes	Yes
Management information	No	Yes	No	Yes	Yes
OPAC	Yes	Yes	No	Yes	Yes
Internet facilities in library	Yes	Yes	Yes	Yes	Yes

It is apparent from table 7 that all the selected libraries have Internet facilities for their library users and library user can enjoy the library resources through OPAC (Online Public Access Catalogue) search. Only SAU library users can not use OPAC as the library does not have the facilities. Comparing to ICT facilities of other library, it is clear that SAU library does not have the major automated library activities. BRAC and EWU library have all the ICT features as they use KOHA software which is completely an integrated library software.

6.1.3 ICT based library services

Most of the selected university libraries provide computerized service to users. Four out of five university libraries provide ICT-based services, while the SAU library is not as advanced. The following table illustrates the different services provided by libraries:

Table 8: ICT based library services

ICT based library services	DUL	BUETL	SAUL	EWUL	BRACUL
CD-ROM searching	Yes	Yes	Yes	Yes	Yes
Online searching	Yes	yes	Yes	Yes	Yes
Online networking	Yes	Yes	No	Yes	Yes
Photocopying	Yes	Yes	Yes	Yes	Yes
Online information services	Yes	Yes	Yes	Yes	Yes
News clipping scanning services	Yes	Yes	Yes	Yes	Yes
Database searching	Yes	Yes	No	Yes	Yes
Audio cassettes	Yes	Yes	Yes	Yes	Yes
Video cassettes	Yes	Yes	Yes	Yes	Yes
Printer	Yes	Yes	Yes	Yes	Yes

It is apparent from table 8 that almost all the university libraries are providing ICT based library services except SAU library. SAU library has some limitations as they are not initially offering OPAC, Online journals and other e-resource facilities. However, from conversation with the authority, the researcher understand that, the library is going to provide online services very soon. They are planning to purchase e-reources and providing other online service facilities for their library users.

6.1.4 Internet connection and speed

As technology grows, so does our need for bigger, better and faster Internet connections. Over the years, the way content is presented via the web has changed drastically. Ten years ago being able to center, bold, colored text was something to admire, while today flash, animations, online gaming, streaming video, database-driven Web sites, e-commerce and digital library, virtual libraries are becoming reality. The need for speed has changed the options available to user and libraries alike in terms of how and how fast we can connect to the Internet. While technology changes at a rapid pace, so do Internet connections. The connection speeds listed below represent a snapshot of the selected university libraries. This is no doubt will change over time and Internet connection speeds also vary between Internet Service Providers (ISP) and institutional requirements.

Table 9: Connection and speed

Name of university library	Connection type	Bandwidth
DU Library	ISDN	1 Mbps
BUET Library	VSAT	8Mbps +
SAU Library	Dial up	56Kbps
EWU Library	DSL	8Mbps
BRAC University Library	DSL	8Mbps

Table 9 shows different connection types and bandwidth of the selected university libraries. It is apparent that only SAU library uses dial up connection which is slow compared to other net technologies. All other selected university libraries use advanced Internet technologies as these are all international communications standard for sending voice, video, and data over digital telephone lines or normal telephone wires.

6.1.5 ICT components

Information and Communications Technology (ICT) is an umbrella term that includes all technologies for the manipulation and communication of information. Particularly in university library it is very essentials to perform different library activities. The present study includes different ICT tools that are used in the selected university libraries.

Table 10: ICT Tools

ICT components	DUL	BUETL	SAUL	EWUL	BRACUL
Desktop computer[1]	Yes	Yes	Yes	Yes	Yes
Laptop computer	Yes	Yes	No	Yes	Yes
Scanner	Yes	Yes	Yes	Yes	Yes
Laser printer	No	No	No	Yes	Yes
Network printer	No	No	No	No	No
Windows 1998/2000[2]	Yes	Yes	Yes	Yes	Yes
Windows NT	Yes	Yes	No	Yes	Yes
Windows XP	Yes	Yes	Yes	Yes	Yes
Linux	No	No	No	No	Yes
Oracle[3]	No	No	No	No	No
Microsoft access	Yes	Yes	Yes	Yes	Yes
SQL	Yes	Yes	No	Yes	Yes
LAN[4]	Yes	No	No	Yes	Yes
WAN	Yes	Yes	Yes	Yes	Yes
VPN	No	No	No	No	No

E-mail (Official not free like Yahoo!)	No	No	No	No	Yes

Note: [1] Hardware components, [2] Operating system, [3] Database management system, [4] Network and access.

Table 10 shows the different features of ICT in the selected university libraries and it is apparent that most of the libraries have the general tools of ICT. But some advanced ICT tools like Linux, VPN and official e-mail are not being used by the university libraries.

6.1.6 Web-based library services

The emergence of the World Wide Web (WWW) and Internet as a new media of information storage and delivery provide an unparalleled media for delivery of information with greater speed and economy. The web technology and Internet has changed the way of information is stored, retrieved and communicated in the libraries. As more libraries move towards providing their services in a digital environment, the improved access to remote library collections is making the use of electronic information resources more realistic and more attractive (Bhatnagar, 2005). Library service on the internet requires many of the same qualities as traditional references: accuracy, promptness, courtesy, an understanding of the information need. It provides users with the convenience of accessing information in their own time, saving them traveling cost and time and new options for answering reference questions. The provision of these services is not constrained by the traditional opening hours but can be offered on a 24-hour, seven-days-a-week basis known as 24/7. And while there may be a disadvantage in not having a face-to face encounter, there are many advantages to this new medium and the greatest advantage is that many more users can be helped by using electronic library services.

Table 11: Web-based library services

Web-based services	DUL	BUETL	SAUL	EWUL	BRACUL
1. Access	Partially	Partially	No	Yes	Yes
2. CAS	Yes	Yes	Yes	Yes	Yes
3. OPAC	Yes	Yes	No	Yes	Yes
4. Online tutorial	No	No	No	No	No
5. Subscription e-resources	Yes	Yes	No	Yes	Yes
6. Information gateway	No	No	No	No	No
7. Virtual reading facilities	No	No	No	Yes	No
8. Full text online database	Yes	Yes	No	Yes	Yes

1= Access to full text documents in digital format, 2=CAS: Web-based current awareness services, 3= OPAC: Online Public Access Catalogue, 4=In house online tutorials how to use the information services, 5= Subscription of web-based e-book, e-journals, databases, 6= Organized access to free subject-based

information gateway/portals on Internet, 7= Virtual reading facilities, 8= Full text online database, i.e. AGORA, HINARI, PERI, OARE, IEE, Springer, if others please mentions.

Due to the different applications of web-based library services, it has become very useful for the library users. To accomplish this, libraries must take the initiative in applying various web technologies to their users and internal operations, making the Internet an integral part of the library's infrastructure. Table 11 describes different web-based library services and it is apparent that almost all the libraries have some features of web-based library services. Only EWU library has virtual reading facilities for library users and no university library does offer online tutorial facilities for their users. SAU library does not provide web-based library services for library users except the Current Awareness Services (CAS).

6.2 Respondents' demographic information

Information on users was collected based on the variables of sex, respondent category and type of universities. Table 12 shows some statistics about different variables with their frequency and percentage. Based on the demographic information presented in table 12, of the total population, most of the respondents were male (58.9%) and 41.9% were female. In case of respondent category, most of the respondents were students (74.1%) and 25.9% are teaching faculty of the respective universities. Large number of respondents has been taken from Dhaka University considering its total number of students, faculties and almost similar number of sample has been chosen from rest of the universities.

Table 12: User demography (N=540)

Variable	Category	Frequency	Percentage
Gender	Male	318	58.9
	Female	222	41.9
Respondent	Student	400	74.1
	Teaching faculty	140	25.9
Type of university (Public)	DU	250	46.3
	BUET	76	14.1
	SAU	74	13.7
Private	EWU	70	13.0
	BRAC	70	13.0

6.2.1 Frequency of library visit

The initial question to the user was how frequently they visit library. The study revealed that most of the respondents (50.7%) use library whenever needed. While the respondents who report that they visit the library regularly are at the second position with 29.4%, they are followed by those who do so once a week (19.8%). There are no respondents who never use

the library and it is very positive finding that a large number of users visit the library quite regularly.

Table 13: Library visit

Interval	Frequency	Percentage	Cumulative percentage
Regular	159	29.4	29.4
Once in a week	107	19.8	49.3
Whenever needed	274	50.7	100
Total	**540**	**100**	

6.2.2 Purposes of using university library

It is apparent from table 13 that half of the respondents use library whenever they needed. As a result, it could be said that these university libraries are playing a good role for the respondents. As an academic library it is very rational that it will meet up the academic purposes of the students. The students were asked for what purpose do they use the university library, and the results show (Table 14) that a vast majority of the students use the library for their academic courses. 81.9% respondents replied that they use university library for academic purposes and it is followed by borrowing books (37.4%), enjoying Internet facilities of the library (10.2%) and others (3.5%). The notable feature is that the students are using these libraries for using Internet.

Table 14: Use of university library (Multiple choices)

Purposes	Frequency	Percentage
Academic purposes	442	81.9
Borrowing books	202	37.4
Availing net facilities in library	55	10.2
Others	19	3.5

6.2.3 Library collections

A good university is always treated by its rich collection. The collection may be printed or digital. Students were asked whether the library collection meet all their information need.

Table 15: Library collection

Nature	Frequency	Percentage
Always	82	15.2
Very often	152	28.1
Sometimes	277	51.3
Seldom	26	4.8
Never	3	0.6
Total	**540**	**100.0**

It is revealed from table 15 that most of the students are not satisfied to their university library collection as more than half of the respondents (51.3%) said that university library

collection sometimes meet their information need. However, 28.1% said that very often these collections meet their demand. Data reveals that only 15.2% respondents always get the information they demand from the university library collection and 0.6% respondents reply that university library collection never meets their demand.

6.2.4 Internet and respondent's opinion

Educational systems around the world are under increasing pressure to use the new information and communication technologies (ICT) to teach students the knowledge and skills they need in the 21st century. The challenge confronting our educational systems is how to transform the curriculum and teaching-learning process to provide students with the skills to function effectively in this dynamic, information-rich, and continuously changing environment. ICTs provide an array of powerful tools that may help in transforming the present isolated, teacher-centred and text-bound classrooms into rich, student-focused, interactive knowledge environments. To meet these challenges, learning institutions must embrace the new technologies and appropriate ICT tools for learning. They must also move towards the goal of transforming the traditional paradigm of learning (Omwenga, 2005). In the drive in higher education to promote the use of information and communications technology (ICT), the role of the Internet cannot be over emphasized. The Internet provides scientists, lecturers and students, access to non-traditional sources of information at any point of the globe. It is becoming more and more convenient to access. Students were asked where do they access the Internet.

Table 16: Internet access points

Sl.no	Access points	F(Frequency)	S (Frequency)	F(Percentage)	S(Percentage)	Total
1	Home	134	219	38.0	62.0	353
2	University library	34	114	23.0	77.0	148
3	Cyber café	17	118	12.6	87.4	135
4	Others	36	22	62.1	37.9	58
5	I do not access internet	1	33	2.9	97.1	34

Notes: F=Faculty, S=Students

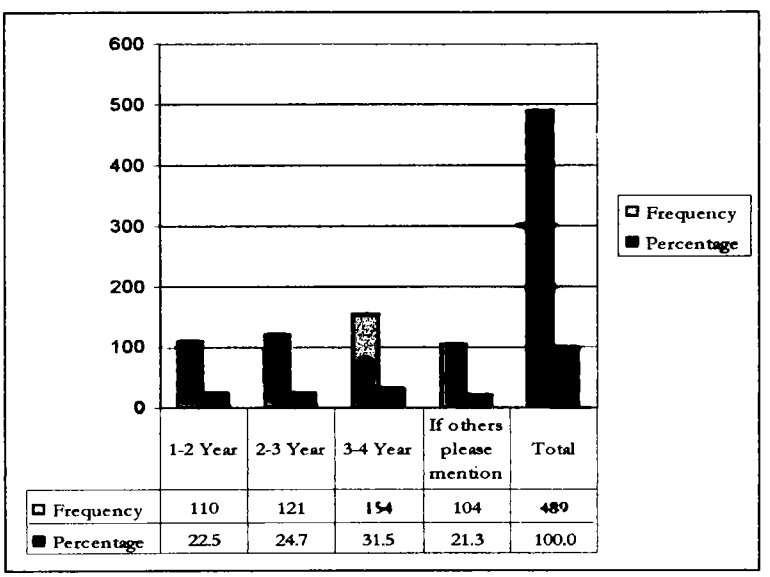
Table 16 reveals the access points for using Internet in the selected university libraries. It was found that majority of the respondents use Internet at home (353), which is followed by university library (148), cyber cafes (135) and others (58). However, 34 respondents do not access Internet during the study period. The rate of Internet access in cyber cafes and libraries are low. It is also observed that library does not have enough facilities to provide Internet access to the students and this factor brings the university library at the second

position of the list. However, some significant factors are that more students access Internet through cyber cafes (87.4%) and more teaching faculties access Internet through home and others channels.

6.2.5 Experience of using Internet

The respondents were asked to indicate their experience of using Internet. Experience of using Internet varied among respondents. As it is illustrated in figure 7, the largest group of respondents had 3-4 years of Internet experience while 22.5% of respondents had 1-2 years of experience. Among other groups 24.7% have 2-3 years and 21.3% respondent's replied with others. The analysis clearly indicates that the majority of the respondent's had more years of using Internet.

Figure 7: Tenure of Internet using

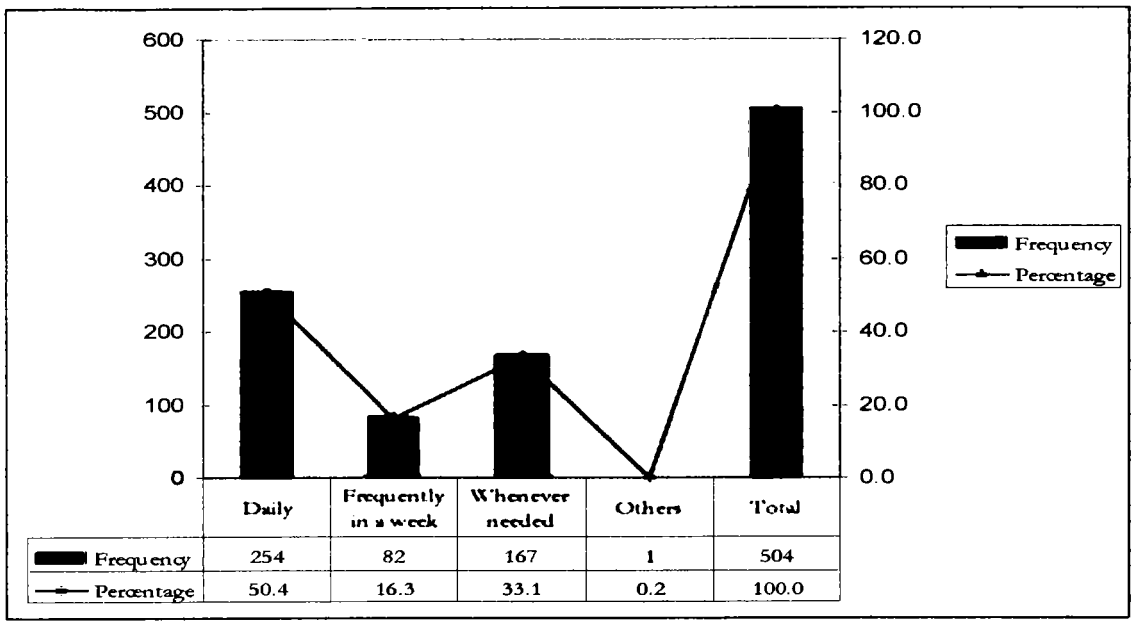


	1-2 Year	2-3 Year	3-4 Year	If others please mention	Total
Frequency	110	121	154	104	489
Percentage	22.5	24.7	31.5	21.3	100.0

6.2.6 Frequency of Internet use

In order to assess the frequency of using Internet services, the respondents were asked to indicate any one out of the four categories. The frequency of using Internet among respondents ranged from daily to others. 50.4% of the respondents use Internet daily which is more than half of all the respondents and it is very significant that Internet has become an Integral part of daily lives. 33.1% respondents use Internet whenever it is needed to them and it is followed by frequently in a week (16.3%) and others are 0.2% (figure: 8).

Figure 8: Using of Internet.



6.2.7 Purpose of using Internet

The reasons given by the respondents for using Internet included for using e-resources, entertainment, news and sports, academic purposes, e-mail, using SNTs and others. The students were asked for what purpose they use Internet, and the results show that a vast majority of the students use Internet for their courses and homework assignments.

Table 17: Reasons for using Internet (Multiple choices)

Purposes	Student	Faculty	Frequency	Percentage
Using e-resources	65	16	81	15
Entertainment	101	11	112	20.7
News and sports	12	64	76	14.1
communication	82	9	91	16.9
Academic purposes	160	16	176	32.6
Using SNT's	61	6	67	12.4
E-mail	129	115	144	26.7
All of the above	148	119	267	49.4

Table 17 shows why the respondents use Internet for their different activities and it indicates the growing use of Internet for different purposes. It is apparent from table 17 that most of the respondents (49.4%) use Internet for the purposes that are mentioned in the questionnaire. As the present study is conducted on some higher academic institutions, usually the second single reason for using Internet is for academic purposes (32.6%). So it

could be said that respondents have marked using Internet for their academic purposes as their first preference. This preference is followed by the options of using the Internet for e-mail (26.7%) and for entertainments (20.7%). Use of Internet for communication is the fourth important purpose to the respondents. Moreover, other purposes such as using e-resources, news and sports and using SNT's have almost similar number of respondents. Among the respondents of using Internet, it is apparent that more number of faculties use e-mail feature of Internet and more number of students use Internet for academic purposes.

6.2.8 E-resources and Internet

The respondents were asked how they look for relevant e-resources on the Internet. They were also asked, when looking for information on the Internet, what they respondents consider for easy access to the information. Search engines are picked as the answer to the question by the vast majority of the students. 66.3% respondents chose the web search engines for easy access to the Internet. 28% respondents consider the second most important way to reach information in the Internet is university/library website, which is followed by web portals (27%) and online database with links to full text (12%). The number of respondents who uses other sources to find information in the Internet is very low.

Table 18: How do you reach information on the Internet? (Multiple choices)

Using e-resources	Frequency	Percentage
University/library website	151	28
Web search engines	358	66.3
Portals on the Internet	146	27
Online database with links to full-text	65	12
Others	19	3.5

Students who selected search engines as the most important means of information retrieval were asked to record the three search engines they use most frequently. Almost all the respondents marked the Google search engine as their first preference (78.3%), which is followed by Yahoo! (13.9%) and Altavista (1.7%).

6.2.9 Impact of Internet on academic activities

The development of Internet during the past four decades has had a profound impact on society in general, and on the field of library and information science in particular. Influence of Internet on the respondents' has positive significant. Respondents were asked to determine the impact of Internet on their academic activities. Table 19 (a) shows how Internet is having an impact of their academic activities. It can be clearly seen that impact of Internet varies across the different groups. According to the table 19 (a), most of the

faculties (43.9) replied that Internet has impact on their academic activities in moderate level and it is followed by high (30.2%), very high (17.3%) and low (8.6%). No respondent feel that Internet has very low impact on their academic activities. It is very significant that all the faculties agreed that Internet has significant role in their academic purposes. On the other hand, like faculty members, most of the students (52%) also agreed about the impact of Internet for their educational purposes. But here 2.5% students replied that Internet has very low impact on their academic life. Only 10.1% students report that Internet has very high impact on their educational purposes which is below than faculty ratio.

Table 19 (a): Impact of Internet on academic activities

Variable	Impact measure	Frequency	Percentage	Cumulative Percentage
Faculty	Very low	0	0	0
	Low	12	8.6	8.6
	Medium	61	43.9	52.5
	High	42	30.2	82.7
	Very high	24	17.3	100.0
	Total	**139**	**100.0**	
Student	Very low	9	2.5	2.5
	Low	46	12.5	15.0
	Medium	191	52.0	67.0
	High	84	22.9	89.9
	Very high	37	10.1	100.0
	Total	367	100.0	
	In total	**506**		

Table 19 (b): Impact of Internet on academic activities (Descriptive statistics)

Variable		N	Mean	Std. Deviation
Faculty	Measure the impact of internet on your academic activities	139	3.5612	.87737
Student	Measure the impact of internet on your academic activities	367	3.2561	.89002
	N	506		

* 1=Very low, 2=Low, 3=Medium, 4=High, 5=Very high

It is generally believed that Internet is rapidly becoming a key factor processing, storing, transferring and retrieving information more than the traditional methods of information production and dissemination. This means rapid and easy access to information could provide potential opportunities for the faculties, students and so on. The respondents asked to evaluate the impact of Internet from 1- very low to 5-very high on five-point Likert scale. Table 19 (b) shows the frequency of user response and mean (standard deviation) for the question. The result shows that users were generally measured the impact of Internet and table 19 (b) shows the frequency of user response and mean (standard deviation) for the

question. It is showed that impact of Internet most ratings fell above 3, i.e. the average score. It is meant that impact of Internet on respondents is in growing.

6.2.10 Internet and e- resources

Developments in ICT have made significant impact on all spheres of human life. The impact has been rather prominent in case of service activities such as banking, health, transportation, education and libraries. Benefits of use of ICT in services can be broadly explained in terms of 4 Es, namely economy, ease, extension (or expansion) and efficiency (Chauhan, 2004). For the Libraries, ICT's has tremendously changed the Management of Resources or House Keeping Operations as well as the way services are delivered. While general IT application tools and Integrated Library Management Systems are largely used in house keeping operations, like acquisition, cataloguing, circulation control, serials control etc; Internet has been used extensively as a resource as well as a tool to deliver the Library and Information Services (LIS). In this phase, the present study shows how Internet has had impact on ICT services. Table 20 reveals which resources the respondents consider to be the most important for the efficiency of their study.

Table 20: Important resources for the efficiency of the study

Resources	Frequency	Percentage	Cumulative Percentage
Electronic journals	170	33.5	33.5
Electronic books	74	14.6	48.1
OPAC	70	14.0	62.1
Online database	75	14.8	76.9
Internet browsing	107	21.1	98.0
Virtual reading	10	2.0	100.0
Total	506	100.0	

Table 20 shows how the users from different groups use the information resources for promoting efficiency of their study. It is apparent that all the respondents were aware of the information resources and all of them think that these all resources are useful for them. At the onset, it is revealed that 33.5% respondents consider the electronic journal as a best information resource for the efficiency of their study and second highest is the Internet browsing facilities (21.1%). Other than e-journal and internet, 14% respondents use electronic books, Online Public Access Catalogue (OPAC) and online database which are closely followed by each other. Next in importance is virtual reading that accounts for 2% of the respondents.

6.2.11 Availability of electronic resources

E-resources are resources in which information is stored electronically and which are accessible through electronic systems and networks. E-resources is a very broad term that includes a variety of different publishing models, including OPACs, CD-ROMs, online database, e-journals, e-books, internet resource, print-on-demand (POD), e-mail publishing, wireless publishing, electronic link and web publishing etc. In this context the term means any electronic product that delivers collection of data be it in text, numerical, graphical, or time based, as a commercially available resource. Electronic Resources are becoming very important these days as they are more up-to-date, and can be accessed anywhere, crossing all geographical boundaries (Haridasan and Khan, 2009). In order to identifying the awareness of e-resources, respondents were asked do their library use paid electronic resources.

Table 21: Electronic resources

Type of e-resources	Frequency	Percentage
No, they use only resources available free of charge	126	24.9
Yes, they purchase e-resources for their user	220	43.6
I do not know	160	31.6
Total	**506**	**100.0**

Table 21 shows the awareness approach to e-resources of the respondents. It is showed that 24.9% respondents replied that their library does not purchase paid journals as the library uses only resources which are freely available on the Internet. At the same time, 43.6% respondents mentioned that their library purchase paid e-resources for their library users. Here a notable factor is that, large number of respondents (31.6%) do not know whether their library purchases e-resources or not.

Table 22: Impact of electronic resources on respondents.

	Frequency								
Category	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**Mean**	**SD**
Improving awareness of discipline	6	27	71	207	103	68	25	4.34	1.24
Improving ICT skills	4	15	72	190	103	96	26	4.51	1.22
Helping prepare to class work	4	14	77	177	109	98	28	4.54	1.24
Promoting academic activities	2	16	63	168	133	91	33	4.62	1.21
Changing reading habit	8	18	67	183	110	79	42	4.53	1.31
Overall impact of electronic resources	**5**	**8**	**49**	**238**	**117**	**79**	**11**	**4.45**	**1.05**

(*1=Very low, 2=Low, 3=somewhat low, 4=Medium, 5=somewhat high, 6=High, 7=Very high)

The users were asked to evaluate the impact of electronic resources on them based on different categories and impact from 1-"very low" to 7-"very high" on a seven point Likert scale. Table 22 shows the frequency of user response and mean (standard deviation) for each

questionnaire item. The result suggests that electronic resources had somewhat high impact on the respondents as mean score fell above 4; the average score. In order to analysis the e-resource service performance of the selected academic libraries, different resources, services, library personnel approaches and other e-features of the libraries have been carried out. The result shows that respondents of different university libraries show different opinions in terms of their e-resource and other features. BUET Library users are most satisfied with overall features and services of the library. Overall user satisfaction rating is 5 which is somewhat high. The result showed that EWU library is in the second position as its rating is 4.6 which is in between medium to somewhat high and it is followed by BRACUL (4.3), DUL (4.00). Table 23 shows that SAUL e-resource service performance rating is 3.5 which is in between somewhat low and medium.

Table 23: E-resource service performance of the library

		Frequency								
Study area	**Feature**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**Mean**	**SD**
DUL	Availability of online resources	10	24	47	81	41	15	3	3.8	1.3
	Coverage of subject area	6	17	39	97	37	23	2	4.0	1.2
	Easy of access	9	17	36	71	56	28	4	4.1	1.3
	Ease of use	6	19	45	73	49	23	6	4.1	1.3
	Availability of computer facilities	11	17	45	67	43	32	6	4.1	1.4
	Adequate bandwidth	6	15	52	81	44	19	3	4.0	1.2
	Navigation to resource from library	6	21	48	80	40	22	4	3.9	1.3
	Accommodation facilities	15	25	42	79	36	21	3	3.8	1.4
	Helpfulness of ICT personnel	13	21	45	78	31	26	7	3.9	1.4
	Overall user satisfaction	**5**	**19**	**15**	**141**	**22**	**17**	**2**	**4.0**	**1.1**
BUETL	Availability of online resources	0	1	5	18	21	25	5	5.1	1.1
	Coverage of subject area	0	1	6	24	20	15	9	4.9	1.2
	Easy of access	0	1	5	24	23	8	14	5.0	1.3
	Ease of use	0	1	7	25	16	13	13	5.0	1.3
	Availability of computer facilities	0	2	5	20	20	18	10	5.0	1.3
	Adequate bandwidth	0	2	8	19	21	13	9	4.9	4.8
	Navigation to resource from library	0	0	11	25	16	15	7	4.8	1.2
	Accommodation facilities	0	1	9	24	19	10	11	4.8	1.3
	Helpfulness of ICT personnel	0	1	8	21	21	12	12	4.9	1.3
	Overall user satisfaction	**0**	**1**	**7**	**23**	**18**	**11**	**15**	**5.0**	**1.3**
SAUL	Availability of online resources	5	7	16	27	15	4	0	3.7	1.2
	Coverage of subject area	2	5	25	28	14	0	0	3.6	1.0
	Easy of access	3	5	25	31	9	1	0	3.6	1.0
	Ease of use	3	4	19	36	8	3	0	3.7	1.0
	Availability of computer facilities	1	9	21	27	13	2	1	3.7	1.1
	Adequate bandwidth	1	8	28	25	9	2	0	3.5	1.0
	Navigation to resource from library	1	11	16	31	13	1	0	3.6	1.0
	Accomodation facilities	4	7	24	24	14	1	0	3.5	1.1
	Helpfulness of ICT personnel	4	9	19	28	11	2	0	3.5	1.1

	Overall user satisfaction	**1**	**9**	**29**	**22**	**12**	**1**	**0**	**3.5**	**1.0**
EWUL	Availability of online resources	2	0	3	20	12	25	6	5.0	1.3
	Coverage of subject area	2	0	4	17	21	19	5	4.9	1.2
	Easy of access	1	1	9	16	10	28	3	4.9	1.3
	Ease of use	3	0	2	18	14	24	7	5.1	1.4
	Availability of computer facilities	6	9	5	17	14	11	6	4.2	1.7
	Adequate bandwidth	3	4	13	20	18	8	2	4.1	1.4
	Navigation to resource from library	2	2	7	21	19	15	2	4.6	1.3
	Accomodation facilities	4	3	7	22	20	10	2	4.3	1.4
	Helpfulness of ICT personnel	3	4	7	25	17	8	4	4.3	1.4
	Overall user satisfaction	**4**	**1**	**2**	**21**	**27**	**11**	**2**	**4.6**	**1.3**
BRACUL	Availability of online resources	0	0	2	37	29	1	0	4.4	0.6
	Coverage of subject area	-	1	5	36	27	0	0	4.3	0.7
	Easy of access	0	1	5	39	24	0	0	4.2	0.7
	Ease of use	0	0	3	39	25	1	1	4.8	3.5
	Availability of computer facilities	0	1	4	36	28	0	0	4.3	0.7
	Adequate bandwidth	0	0	5	36	27	1	0	4.3	0.6
	Navigation to resource from library	0	1	4	34	29	1	0	4.4	0.7
	Accomodation facilities	0	0	4	41	22	2	0	4.3	0.6
	Helpfulness of ICT personnel	0	0	7	41	20	1	0	4.8	4.8
	Overall user satisfaction	**0**	**0**	**10**	**40**	**19**	**0**	**0**	**4.3**	**0.6**

The level of overall satisfaction with the e-resource facilities provided by the university libraries is discussed in table 24. The respondents were asked to measure the e-resource facilities and satisfaction level from 1-"very satisfied" to 5-"Don't know" on a five-point scale. Table 24 shows the frequency of respondents' response and mean (standard deviation) for each questionnaire item. The result suggests that BUET and EWU library respondents are more satisfied than other respondents as both university's rating fell above 2.1; the average score.

Table 24: Satisfaction of overall electronic resource facilities

	Frequency						
Study area	1	2	3	4	5	**Mean**	**SD**
DUL	14	122	56	12	17	2.5	1.0
BUETL	8	58	5	0	5	2.1	0.8
SAUL	1	20	46	2	5	2.9	0.8
EWUL	6	53	5	2	1	2.1	0.6
BRACUL	2	65	2	0	0	2.0	0.2

* (1=Very satisfied, 2= Satisfied, 3=Dissatisfied, 4=Very dissatisfied, 5=Don't know)

Respective university library users were asked to state any difficulties of using e-resource facilities of the university library. Table 25 separately tried to identify the problems of using e-resources of the university libraries. It is clearly seen that problems of using e-resources varies considerably across different university and respondents have very different ways of identifying the problems.

Table 25: Problems of using e-resources of respective university library (Multiple)

	DUL		BUETL		SAUL		EWUL		BRACUL	
Problems	F	P	F	P	F	P	F	P	F	P
a	107	42.8	62	81.6	21	28.4	13	18.6	46	65.7
b	123	49.2	16	21.1	23	31.1	29	41.4	58	82.9
c	147	58.8	7	9.2	32	43.2	36	51.4	64	91.4
d	130	52	24	31.6	49	66.2	32	45.7	50	71.4
e	69	27.6	16	21.1	21	28.4	5	7.1	32	45.7
f	54	21.6	11	14.5	28	37.8	3	4.3	9	12.9
g	45	18	1	1.3	2	2.7	12	17.1	3	4.3
h	12	4.8	1	1.3	0	0	4	5.7	0	0

Note: F=Frequency, P=Percentage
(a=only a limited number of subject title b=Do not have access from home, c=Slow download speed, d=Limited access to computers, e=Limited access to back issue, f=Difficulty in finding information, g=Unsuitable space, environment and h=others).

Most of the respondents (52%) of Dhaka Univeristy library identified that limited access to computers is the problem of using e-resources. Second highest number of respondents (58.8%) mentioned that internet speed is one of the major barriers of the Dhaka Univeristy Library. Respondents also reported that limited number of subject title (42.8%) and problems of using e-resources from home (49.2%) are the two major problems they face. A few respondents replied that they face other problems of using e-reources. According to the Table 25, 81.6% respondents of BUET library mentioned that lack of adequate number of titles was one of the most significant barriers of using e-resources. Unsuitable space and academic environment follow the similar pattern as 1.3% respondents mentioned the problems. In SAU library 66.2% respondents replied that they had limited access to the computers and it is followed by slow download speed (43.2%), difficulty in finding information (37.8%), do not access from home (31.1%) and limited number of title is 28.4%. In EWU library, more than 40% respondents faced problems on the following three categories. These categories are do not access from home, slow download speed and limited access to computers. Lastly, more than 80% of respondents of BRAC university library identified the problems that they did not access the resources for their home and highest number of respondents (91.4%) faced slow download speed. From the information in the table, apparently it is seen that most of the respondents are facing problems on limited subject title, slow download speed, do not access e-resources from home and limited number of computers. In questionnaire, respondents were asked where do they have access Internet and use e-resources.

Table 26: Reasons for not using e-resources (Multiple responses)

Problems	Frequency	Percentage
I do not know how to use them	19	3.5
I do not know where to them	4	0.7
I do not have any interest	7	1.3
I do not find them useful	5	0.9
Others	7	1.3

A total 34 out of 540 respondents mentioned that they do not access Internet during the study period. Initially, respondents were asked why do they not use e-resources. 3.5% respondents replied that they do not know how to use them and rest of them replied that they do not know where to get these resources, don't have any interests and so on.

6.3 Hypotheses testing

In order to analyze the influence of users' demographic characteristics of their opinion on impact of Internet on academic activities, overall impact of electronic resources, overall electronic resource facilities and overall user satisfaction, the following null hypotheses were tested:

H1. There is no significant difference between male and female user in terms of their opinions on impact of Internet on academic activities, overall impact of electronic resources, overall user satisfaction and overall electronic resource facilities;

H2. There is no significant difference between respondent category (faculty and student) in terms of their opinions on impact of Internet on academic activities, overall impact of electronic resources, overall user satisfaction and overall electronic resource facilities.

Table 27: Mann-Whitney (M-W) test for gender (*H1*)

Study area	Impact of Internet on academic activities		Overall impact of electronic resources		Overall electronic resource facilities		Overall user satisfaction	
	M-W U value	*p*- value	M-W U value	*p*- value	M-W U value	*p*- value	M-W U value	*p*- value
DUL	4500.5	**0.000***	5461	0.126	5205	**0.043***	5538.5	0.192
BUETL	433.5	0.096	432.5	0.152	457.5	0.078	407	0.052
SAUL	563	0.771	552	0.677	497	0.224	520.5	0.418
EWUL	278	0.53	281	0.575	296.5	0.784	290	0.681
BRACUL	551	0.804	504	0.393	533.5	0.309	532	0.626

Note: *significant at $p<0.05$

The Mann-Whitney test result for gender differences (Table 27) among library users showed that there were no significant differences between male and female users in terms of their

opinion on 'impact of Internet on academic activities' in four study areas, but there was a significant difference existed between male and female users in terms of 'impact of Internet on academic activities' in Dhaka University. There were no significant differences between male and female users in terms of their opinion on 'overall impact of electronic resources' in all five areas. There were no significant differences between male and female users in terms of their opinion on 'overall electronic resource facilities' in four areas, but significance shows between male and female users in terms of their opinion in Dhaka University. There were no significant differences between male and female users in terms of their opinion on 'overall user satisfaction'. The null hypothesis (*H1*) was therefore accepted for four areas, but not accepted at Dhaka University.

Table 28: Mann-Whitney (M-W) test for category (*H2*)

Study area	Impact of Internet on academic activities		Overall impact of electronic resources		Overall electronic resource facilities		Overall user satisfaction	
	M-W U value	*p*- value	M-W U value	*p*- value	M-W U value	*p*- value	M-W U value	*p*- value
DUL	2660	**0.000***	3985	0.389	2788	**0.000***	4150.5	0.716
BUETL	313.5	**0.000***	409	**0.008***	393	**0.000***	64	**0.000***
SAUL	84	**0.000***	462.5	0.101	508.5	0.219	168.5	**0.000***
EWUL	290.5	**0.011***	372	0.185	407.5	0.342	319	**0.035***
BRACUL	364	**0.035***	478	0.861	456.5	0.274	398.5	0.171

Note: *significant at $p<0.05$

The Mann-Whitney test result for category (faculty and student) differences (Table 28) among library users showed that there were significant differences between faculty and student users in terms of their opinion on 'impact of Internet on academic activities' in all five areas. There were no significant differences between faculty and student users in terms of their opinion on 'overall impact of electronic resources' in four areas, but there were significant differences existed between faculty and student users in terms of 'overall impact of electronic resources' in BUET library. Same as no significant differences were between faculty and student users in terms of their opinion on 'overall electronic resource facilities' in three areas. But, there were significant differences existed between faculty and students in terms of their opinion in Dhaka University and BUET. Significances were not shown between faculty and student users in terms of their opinion on 'overall user satisfaction' in two areas (DU & BRAC University). But there were significant differences existed between

faculty and student users in terms of 'overall user satisfaction' in BUET, SAU and East West University. The null hypothesis (*H2*) was therefore rejected in all five areas.

6.3.1 Impact of Internet and respondent category (Pearson Chi-Square test)

Results of cross tabulations on user category revealed significant difference between student and faculty respondents on the impact of Internet in academic activities (X^2 =12.58; df=4; *P*= 0.0135) which is less than *P=0.05*. Results of Chi-Square tests for 'Does application of Internet make your research/study easier?" shows that there were no significant differences among the user group (X^2 =5.39 ; df=2; *P*= 0.067). Results of cross tabulations between user category and impact of e-resources shows that there is significant difference in impact of e-resources. Significant difference was also found for the overall impact of electronic resources (X^2=16.44; df=6; *P*=0.012)

Table 29: User category and impact of e-resources

Variables	***Pearson chi-square***		P=0.05 (Significant)
	X^2=	df	*P*
Improving awareness of my disciplines	X^2=37.56292314418	df=6	*P*=.000*
Improving ICT skills	X^2=28.48299013617	df=6	*P*=.000*
Helping to prepare my class works	X^2=29.65171196545	df=6	*P*=.000*
Promoting academic activities	X^2=30.73787199034	df=6	*P*=.000*
Changing my reading habit	X^2=30.66055048694	df=6	*P*=.000*
Overall impact on electronic resources	X^2=16.44319569736	df=6	*P*=0.012*

Note: * Significant *p<0.05*

The result of overall electronic resource facilities of the selected university library and respondents' satisfaction level revealed that there was significant relation between these two variables (X^2=21.91; df=4; *P*=0.0002).

6.3.2 Internet and gender factor (Pearson Chi-Square test)

Results of cross tabulations on gender category revealed no significant difference between male and female respondents on the impact of Internet in academic activities (X^2 =9.15; df=4; *P*= .057) which is greater than *P=0.05*. Results of Chi-Square tests for 'Does application of Internet make your research/study easier?" shows that there were no significant differences between male and female (X^2 =1.39; df=2; *P*= .498). Results of cross tabulations between gender category and impact of e-resources shows that there were no significant difference was found for the overall impact of electronic resources.

Table 30: Gender category and e-resources

Variables	*Pearson chi-square*		P=0.05 (Significant)
	X^2=	df	*P*
Improving awareness of my disciplines	X^2=1.52	df=6	*P*=.958
Improving ICT skills	X^2=7.12	df=6	*P*=.309
Helping to prepare my class works	X^2=4.92	df=6	*P*=.553
Promoting academic activities	X^2=2.18	df=6	*P*=.902
Changing my reading habit	X^2=6.11	df=6	*P*=.410
Overall impact on electronic resources	X^2=13.51	df=6	*P*=.036

Note: * Significant $p<0.05$

6.3.3 Recommendations at respondent's end

Internet use is not without problems. Respondents indicated the problems they encountered. The problems encountered while using the Internet mainly come from the following major factors, namely; slow access speed, only a limited number of subject title, do not have access facilities from home, limited access points, difficulty in finding information and other relevant features of using Internet. For this reasons, respondents of these selected universities were asked what do they think to improve the present situation. In order to identify the problems of the respective university, data has been analyzed separately.

Table 31: Recommendations to overcome the problems (Multiple choices) N=506

	DUL		BUETL		SAUL		EWUL		BRACUL	
Recommendations	**F***	**P****	**F**	**P**	**F**	**P**	**F**	**P**	**F**	**P**
a	120	48	58	76.3	33	44.6	35	50	46	65.7
b	162	64.8	20	26.3	33	44.6	54	77.1	64	91.4
c	149	59.6	17	22.4	43	58.1	21	30	57	81.4
d	107	42.8	16	21.1	40	54.1	18	25.7	40	57.1
e	98	39.2	13	17.1	29	39.2	26	37.1	14	20
f	12	4.8	-	-	-	-	-	-	-	-

Note: (a. Increase accommodation facilities, b. Increase number of PCs with Internet connections, c. Need to build cyber cafe in university area to increasing access point, d. Need to arrange training program for the users, e. Increase subject coverage, e-journals and e-books, f. If others please specify)
F* Frequency, P* *Percentage

Table 31 shows how respondents are felt about their problems and put their recommendations to overcome the problems. It is clearly seen that number of recommendations are varied according to the exact demand of the respective university.

Section-2: Impact of Internet at professional point of view

6.4 Professionals opinion

The section is prepared based on opinion collected from professionals of the respective study areas. The respondents include only those who are working in these university libraries. Data collection is conducted by the professional through a structured questionnaire. The professional level survey has been conducted to measure their point of view to using Internet. The professional information also provided the extent & effectiveness of using Internet in their operational activities. Information, as the saying goes, is power. The primary objective of librarian is to organize and provide access to information for the users. This objective will never change, although the format and the methods that are used can change dramatically, providing new opportunities and challenges. Like their colleagues everywhere, library professionals in Bangladesh, particularly those serving high-tech institutions, are already subject to various challenges. The introduction of Internet was a challenge to all librarians. New technology may call for organizational change in the traditional library. Librarians may have to function more like consulting information engineers than as the traditional, passive custodians of information and dispensers of documents, moving from a collection-centered model to one that is access- and service-oriented (Gulati and Raina, 2000). To take up such a role, Library and Information Professionals (LIPs) have to pay serious attention towards developing and enhancing their core competencies. Core competencies in the case of LIPs are: (i) Personal; and (ii) Professional. Competencies have been defined as the interplay of knowledge, understanding skills and attitudes required to do a job effectively from the point of view of both the performer and the observer. The unique competencies of the library professionals include in-depth knowledge of print and modern electronic information resources (Marshall, et. al., 1996). The internet and web technology has changed the way library professional interact, communicate, share and acquire knowledge. However, when the web was created it did not have features and facilities for users to interact. With the evolution of internet and communication technology, it has evolved into a dynamic, interactive and collaborative platform that facilities exchange of knowledge and information amongst library professionals and users. The objectives of the section is that to know how does Internet help the professional to conduct their library activities, what impact it had to them and to know their views of using Internet in libraries.

6.4.1 Learning Internet

Information professionals were asked where they learnt the use of Internet from and the survey results revealed that 66% learnt using Internet by self instruction. It is very significant that information professionals are interested to learn about the use of Internet and not wait for any formal and institutional training program. Survey results reflected that second highest 65% professionals learnt the use of Internet through training from university library.

Table 32: Methods of Internet learning (Multiple choices)

Internet learning methods	Frequency	Percentage
Trial and error methods	2	3.3
Guidance from colleagues and friends	22	36.7
Training from university library	39	65
Self instruction	40	66.7
External courses	11	18.3

With regards to guidance from colleagues and friends, 36.7% responded affirmatively and it is followed by external courses (18.3%) and trail and error methods (3.3%). In reviewing the learning methods it could say that respective university library should come forward to arrange more training program for the professionals. A primary method for learning the Internet is for librarians to take advantage of training provided by their own institutions. According to Basu (1952, 12) "it is up to each institutions to prepare its staff to cope with it's [the Internet's] intricacies and to utilize it so that they may quickly become part of this knowledge based society".

6.4.2 Efficiency and Internet

The main aim of this part is to evaluate the performance and impact of Internet on the selected library professionals. As indicated above that Internet is such a tool that information professional can use it in different avenues for pursuing their internal and external library activities.

Table 33: Professional efficiency

	Frequency								
Impact features	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**M**	**SD**
Increasing professional competency	7	26	27	-	-		-	2.3	0.7
Building confidence to providing services	8	27	25	-	-		-	2.3	0.7
Help to provide quick reference services	4	25	30	1	-		-	2.5	0.7
Availability of information	1	35	3	-	2		-	2.5	0.7
Improving information services	5	24	28	-	1		2	2.6	1.1
Improving quality of the services	8	25	26	1	-		-	2.3	0.7
Expedited the service process	11	23	24	1	-		1	2.3	1.0
Use of conventional documents has decreased	23	23	14	-	-	-	-	1.9	0.8
Dependency on internet has increased	5	41	13	1	-	-	-	2.2	0.6

Upgraded knowledge and skill	13	26	20	1	-	-	-	2.2	0.8
Increased job satisfaction	7	22	30	1	-	-	-	2.4	0.7
Reduced workload	16	24	19	1	-	-	-	2.1	0.8

Table 33 reveals that how Internet increased the professional efficiency of the library professionals. Professionals were asked with which features Internet had impact on them and the analysis shows that all impact features were used by the professionals. The professional were asked how the Internet increased professional efficiency and impact from 1- "partially agree" and to 7- "strongly disagree" on a seven-point Likert scale. Table 33 shows the frequency of each impact features of Internet and mean (standard deviation) for each questionnaire item. The result suggests that library professionals were agreed with the Internet impact on promoting professional competency as most rating fell above 2, i.e the average score. The analysis of mean rank scores indicates that professionals are agreed with the statements.

6.4.3 User demand and Internet

The use of Internet to meet the user demand by the library professionals are focused in the table 34. At present time, it needless to say that it is next to impossible to provide all sorts of information services without the help of Internet. Table 34 shows that 50% respondents are agreed with to some extent that they can meet up the user demand with the help of Internet.

Table 34: Using Internet meeting user demand

Opinion	Frequency	Percentage
To a little extent	12	20
To some extent	30	50
To great extent	18	30
Not at all	0	0
Can not say	0	0
Total	60	100

It is generally believed that using Internet could meet up the user demands. In addition, 30% respondents believed that Internet could meet up the user demands to great extent and it is followed by 20% who believes that Internet could meet up the user demand to a little extent. No professionals are responded with the statement not at all and can not say.

6.4.4 Internet and competency

The Internet is quickly becoming an essential tool in many university libraries, in both public service and technical service departments. A literature search revealed that most of the available material dealing with the Internet and the university library focuses on the use of

this tool and instruction in its use. This study examined the Internet skills of the selected university professionals. The survey of 60 professionals resulted in several significant findings. It is apparent that most of the professionals (46.7%) Internet operation skills are average and 31.7% professionals have good operational skills. Only 18.3% professionals have expertization and very few of them (3.3%) have poor operational skills.

Table 35: Internet operation skills

Skills	Frequency	Valid Percent
Good	19	31.7
Average	28	46.7
Expertise	11	18.3
Poor	2	3.3
Total	60	100

6.4.5 Internet and training

The major focus of this research is that Internet has the positive impact on the library's services and it has impact also on library professional activities. The data presented in this paper indicate that most professionals of these university libraries were generally satisfied with its Internet services and impact. The interviews with library professional have also yielded several important findings and subsequent implications for meeting the needs of them. The most significant issues of these implications are noted in table 36.

Table 36: Competency and training needed

Areas	Confident (F&P)	Training needed (F&P)
Development and administration of databases and library systems	36(60)	24(40)
Hardware maintenance	47(78.3)	13(21.7)
Digital content management	33(55)	27(45)
Knowledge management	37(61.7)	23(38.3)
Development and management of bibliographic database	38(63.3)	22(36.7)
Network administration	27(45)	33(55)
Metadata management including MARC	24(40)	36(60)
Computer programming	20(33.3)	40(66.7)
Web site maintenance	24(40)	36(60)

Note: F&P (Frequency and percentage)

Table 36 compares the ratio of the professionals in the selected university libraries in which areas they are skilled and where it needs training program. It is apparent that professional competency and training ratio varies considerably. According to the table, more professionals were replied that they need training program on the following areas namely; network administration, meta data management including MARC, computer programming

and website maintenance. On the other hand, professionals are more competent on the management of library system, content management and bibliographic database.

6.4.6 Internet and library

The information available on the Internet has proved to be a great asset for many of the professionals. They have been able to keep themselves abreast with the latest information and improve their competence. On the question as to which professionals think Internet can replace library services.

Table 37: Internet replace library

Response	Frequency	Percentage
Yes	31	51.67
No	29	48.33
Total	60	100

Table 37 reveals that majority of the professionals think that Internet can replace library services as 51.67 replied that. I tend to hear most often: "You don't need libraries because everything is available on the internet. 48.33% replied that Internet can not replace library services. For those who preferred the library, the reasons given include slowness of the Internet and the fact that library use is free.

6.4.7 Problems of using Internet in library

Due to variations in the setup and configuration of remote computers and networks, some online resources may not be usable from some remote computers and/or networks. Besides these there are some other problems of using Internet in libraries which might hamper the library services. Professionals were asked what are the problems that they frequently face of using Internet in libraries.

Table 38: Barriers of using Internet

	Frequency								
Areas	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**Mean**	**SD**
Inadequate ICT hardware and software	12	21	6	14	7	-	-	2.72	1.34
Lack of budget for ICT	11	16	17	14	-	-	2	2.73	1.31
Low skills level of ICT users	11	2	9	15	9	7	7	3.97	1.91
Lack of staff qualified in ICT among library personnel	6	11	9	12	8	9	5	3.87	1.81
Difficulty to recruiting and retaining qualified ICT staff	1	4	9	14	9	12	11	4.77	1.61
Reluctant among staff to use ICT	4	6	11	15	12	6	6	4.12	1.64
Lack of commitment by top management in my institution	4	-	7	16	13	10	10	4.74	1.61

It can be referred from table 38 that Internet use is not free of problems in any libraries. The problems encountered while using the Internet mainly comes from the following areas: inadequate hardware and software, low budget for ICT, lack of skillness of the user, less

qualified ICT personnel, reluctant and overall organizational unwillingness. The professionals were asked to identify the problems of using Internet in libraries and measure from 1 – "partially agree" to 7 – "strongly disagree" on a seven-point Likert scale. Table 38 shows the frequency of user response and mean (standard deviation) for each questionnaire item. The result suggests that for "Inadequate ICT hardware and software" and "Lack of budget for ICT" variables mean is above 2, i.e. the average score. Skill of using ICT and qualified staff the scores are above 3 as they are strongly agreed with the problems. In order to analyze the variables of recruiting staff, reluctant and commitment, the scores go to up 4, i.e the professionals do not have any opinion. As the analysis of mean score goes to 5 for the rest variables, it indicates that they were partially disagreeing with the statements. In general it could say that there are lots of things to do for overcoming these problems.

Chapter Seven
Finding and recommendations

7.1 Introduction

This chapter summarizes the results of the study on assessing the impact of Internet in library and information services and study of some higher academic institutions in Bangladesh. Analysis of respondent's opinion shows some significant outcomes of using Internet in their academic services and some additional Internet services expected by the respondents. It is found that the services of different units of the selected university libraries are not sufficient to meet the needs of the respondent's information requirement. Many respondents of the selected university libraries are satisfied of using Internet in different levels and some have cited problems of their libraries. Some of the findings are discussed and based on that suggestions are placed by the respondents. These are focused in this chapter.

7.2 Institutional findings and recommendations

7.2.1 University libraries and their information

The present study is focused on five university libraries in Bangladesh. Three of them are of public and two are of private university libraries. Dhaka Univeristy is the oldest and largest university library in Bangladesh. BUET library is specialized in its collection for engineering education and it is the pioneer university in engineering education. SAU is an agricultural university and its collections are based on agricultural education. BRAC and East West universities are private universities and they have significant contribution in promoting higher education in Bangladesh. In general, it is found that these two private university libraries are providing modern and updated information services through modern technology. Only Dhaka Univeristy library and East West university library are opened 7 days for their valued users and rest of all the university libraries are opened for 5 or 6 days. These libraries should be kept open seven days a week.

7.2.2 Automation facilities

It is found that only two university libraries are automated and two are partially automated. But SAU library is not automated and this university library is taking different initiatives to

start automation program in the library. It is very significant that some of these university libraries namely EWU and BRAC university libraries are using OSS software for their automation activities. Other universities are using different software and for full automation facilities these university libraries should use OSS as most of these software's are now fully integrated.

7.2.3 ICT based library services

It is very encouraging that most of the libraries are providing ICT based library services to their users. It covers CD-ROM searching, online information services, database searching and others. But the area of these services should be increased and need to incorporate more modern ICT based services.

7.2.4 Internet connection

All the selected university libraries have Internet connections and their bandwidth ranges from 1 Mbps to 8Mbps. SAU library has dial up connection which has become almost obsolete nowadays. So the library authority should use modern Internet connection technology like WiFi, 3G and NGN (Next Generation Network) technology for their users.

7.2.5 ICT Components

At present several ICT tools are being used for providing information services and most of the selected university libraries have these tools. But in case of hardware components laser printers, network printers are needed to be incorporated in these libraries. Moreover, Linux, Oracle, database management software, operating system and VPN (Virtual Private Network) networking are not being used in these libraries and they should use these ICT components in the libraries.

7.2.6 Web based library services

It is apparent that most of the libraries are providing web based library services for their users except the SAU library. Dhaka University library and BUET library are offering partially full text documents to their users. Only EWU library is providing virtual reading facilities to their users. These university libraries should provide more web based library services and full text documents reading facilities to their users.

7.3 Respondent's (faculty and student) opinion and recommendations

1. The results showed that out of 540 respondents, 274 (50.7%) respondents used university library whenever they needed and 159(29.4%) visits the library regularly. More significant findings is that 442(81.9%) visits the university library for their

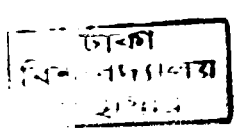
academic purposes and very few of them visit university library for others purposes. It is believed that university library always play a vital role to the users for their academic purposes. That is why authority of the university library should incorporate more and more services for their users.

2. Table 15 shows that most of the students are not satisfied with their university library collections as more than half of them are mentioned that university library does not meet their demand. It is a common problems of all the selected libraries and management should focus in this issue and take necessary actions to overcome the problems of the university libraries.
3. At present, the role of Internet can not be over emphasized as it has become a common tool in modern life. Majority of students and faculty members of the selected university libraries considered their home as a first Internet access point and a good number (148) considered university library as Internet access points during the study periods. The university libraries could do more for their users by providing more Internet facilities.
4. Majority of the respondents (31.5%) had 3-4 years experience of using Internet and more than 50% respondents use Internet daily. It is very significant that majority of the respondents use Internet daily as a part of their daily activities.
5. The reasons of using Internet in Table 17 show that all the respondents had various reasons for using Internet. Among these reasons, e-mail, academic purposes and others are mostly cited by respondents as Internet has great Impact on these reasons. It is apparent form the study that Internet has great impact on academic activities and university authority should give more priority to increase Internet services in the university libraries.
6. The result of searching information on the Internet, 66.3% respondents prefer search engine and 28% prefers the university library websites as their best sources of Information. Here, library websites could play a vital role by decorating the website with more resources and services. Majority of the respondents (78.3%) prefers Google as their favorite search engines.
7. It is apparent from Table 19(a) and 19 (b) that 43.9% faculty and 52% students replied Internet has medium impact on academic activities. A good in number also replied that Internet has very high impact on academic activities. In descriptive

statistics, it is showed that impact of Internet most rating fell above 3, i.e. the average scores and it is meant that impact of Internet is gradually increasing on academic activities.

8. Electronic journals were treated as most important resources for the efficiency of the study and university library should give more emphasis on the subscription of e-journals. Table 21 shows that 31.6% respondents do not know what types of e-resources do their library purchase for them. It is clear that users are not aware of these services and more awareness program need to start in these libraries.
9. The results on e-resource service performance of the selected university libraries showed that BUET library users are most satisfied with overall services and features of the library (Mean score 5), EWU library is in the 2nd position (Mean score 4.6) and it is followed by BRAC university library (Mean score 4.3), Dhaka Univeristy library (Mean score 4.0) and last one is SAU library (Mean score 3.5). It is apparent from Table 23 that many e-resources features of the selected university libraries are very low in seven point Likert scale and university library should further work on these features. Table 24 shows satisfaction of overall electronic resource facilities and it is identified that only BRAC university library users are satisfied as its rating 2.0 and others are above 2 which are dissatisfied.
10. Table 25 identified the problems of using e-resources of the respective university library. Most respondents indicated that they have the problems on limited number of subject title, do not have access from home, slow download speed, limited access to computers and so on. These university libraries should come forward to solve these problems and need to take necessary steps.
11. There were several reasons why respondents were not using e-resources. Table 26 shows that 34 respondents out of 540, do not access Internet during the study period. Identifying the reasons, the library authority could solve the problem as all are related to awareness, training and need assessment.

12. There were no significant differences between male and female users in terms of impact of Internet on academic activities, overall impact of electronic resources and so on. The results of Mann-Whitney test for gender differences showed that although there were no significant differences in terms of the mentioned areas but there was a significant difference existed impact of Internet on academic activities in



Dhaka university library (p value 0.000). At the same time there were no significant differences between respondent category as faculty and student. But few some areas there were significant differences between faculty and student.

13. Pearson Chi-Square test shows the impact of Internet and respondent's category. In these areas there were significant differences which have been shown in Table 29. Result of cross tabulation on gender category revealed that no significant difference between male and female respondents on using Internet and other activities.

7.4 Professionals' opinion

The present part of this study was based on the library professional's opinions who were working in these selected university libraries. In order to measuring the impact of Internet on library and information services, these professionals could measure it properly. At present days library professionals have to depend on Internet as majority of the library activities are done by Internet in libraries. Some of the findings and their opinions are discussed.

- It is apparent from Table 32 that 66.7% information professionals learnt of using Internet by self instruction as now the learning opportunities are available. 65% of the professionals learnt of using Internet in their university libraries.
- Table 33 reveals that library professionals agreed with the impact of Internet on promoting professional competency as most ratings were above 2, i.e. the average score. It is found from the study that Internet has increased their professional competency, confidence to provide quality services, upgraded their knowledge skills, increased job satisfaction and reduced workload.
- At present, it goes without saying that without Internet it is impossible to provide information services in library or information center. 50% of the professionals replied that they meet the user demand to some extent by using Internet and it is very significant that Internet is meeting the user demand in libraries to some or little extent.
- As Internet technology is changing with new tools, Internet skills are very important. Table 35 shows that most of the library professionals of the selected university libraries Internet skills are average and 18.3% library personnel have professional expertization.
- Many library personnel have the confidence of using hardware maintenance, content management, MARC and digital library management but all most all the

professionals have replied that they have training needed on the mentioned areas in Table 36.

- The result found that 51.67% professional replied that Internet can replace library services and it is very significant that being a library professional they make their opinion.
- Table 38 shows that library professionals of the selected university libraries have identified different problems and some of these are inadequate ICT hardware and software, lack of budget for ICT, lack of ICT skills of users and lack of commitment by the top management of the institutions.

The main lesson learned from this research is that Internet has great impact on library and information services and respondents have maintained that Internet has great impact on their academic activities including research and other purposes. The present study also focused the Internet services of the selected university libraries and their Internet service satisfaction level measured by the respondents of the study. The data presented in this paper indicated that most users of the selected universities were generally satisfied with its Internet services and other e-resource facilities. The interviews with library users, Focused Group Discussion (FGD) findings and open parts of the user and professional's questionnaire yielded several important finding and subsequent implications for meeting up the needs of the users. The most significant of these implications are noted below:

- The university library seems unsuited for most of the respondent's first access points of using Internet. Most of the respondents usually spend their most of the times in universities for academic purposes. Library authorities, therefore, need to rethink about the existing Internet facilities and other services of the libraries.
- The university library should not only make efforts to provide Internet access to its students and faculties, it should also include the use of Internet in its library instruction courses which might helpful for the Internet users.
- As the respondents are not aware of the subscribed databases, the library should also make market this information among the library users. A way to do this is by including the information in the library instruction course and on notice board.

- More number of subject titles, providing the facilities to access these resources from home, use modern network features, increased accessed to computer and arrange more accommodation facilities are needed to the respective university libraries.
- Most users suggested having more Internet facilities and Internet access in the library. They suggest to building cyber corner in the university library areas.
- More and more training program is needed so that library users could easily use and retrieve the e-reources. Univeristy library should arrange training program for the library professionals for their professional expertization.
- More library budget and modern hardware and software features should be incorporated in the library. Skilled library personnel should be appointed by the university authority and all the library staff should be given computing training.

7.5 Conclusion

The paper identified the major impacts of Internet in library and information services and assessed how well Internet meets the demand of the library users and professionals. The respondents of the selected university libraries have embraced Internet but the university authority should make more efforts to provide access to them directly and not leave them to other Internet access points. The university library should be well funded by the government and proper authority so that it can provide Internet access for students. The university library must also revise its library instruction program to include Internet use. This will assist the students to be well equipped for full use of the Internet. RQ1 has been shown in chapter 6 that discussed what information is needed for the respondents and what information sources they usually use for finding information. In RQ 2, it is proved from different insights that respondents use Internet in different access points and their purposes of using Internet are different. RQ 3 has been discussed in result of the study chapter as it is shown that respondents use university library websites, search engines and electronic journals seem to them the most important resources for the efficiency of the study. RQ 4 has been discussed throughout the analysis chapter and it is focused that some of the selected university libraries meet up their user demand. Some of the university library users are partially satisfied with their Internet services provided by their university library. RQ 5 and RQ 6 has been analysed elaborately in chapter 4 and chapter 6. In chapter 4 it has been discussed the operational perspectives of the using Internet in library and information

services. It is also discussed that how these academic institutions could benefit by using Internet in different activities of the library. Measuring the impact of Internet has been discussed in result and analysis chapter. It is proved that Internet has increased the academic activities of the respondents, improves the efficiency of the study, increasing access points to resources and they use Internet for different purposes. Finally RQ7 has been discussed in analysis part at section 2. Here professional opinions have been discussed and show how Internet has increased their professional efficiency and improved their services to the library users. University library web page, OPAC, online databases and others online features of Internet proved that Internet application in academic libraries could be an innovative way to promote operational activities and library services. The present study corroborates the findings of similar studies that Internet has become an Indispensable information source of the academic community and reveals its impact in the respective areas.

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Appendices

Appendix-1 (User)

Assessing the impact of Internet in library and information services: A study of some higher academic institutions in Bangladesh.

[The present study is being carried out to assess the impact of internet in library and information services and to show how the higher academic institutions may be benefited by using internet in library operation and services. In this aspect, user information is very much needed to know their usage pattern of internet. I would be grateful if you would take a few minutes to complete this questionnaire. Your responses will be kept strictly confidential.]
[Please Tick (√) in the appropriate box or provide your comments where necessary]

Section 1: General

Personal Information

1. (a) Name:
   (b) Name of the university:
   © Department:
   (d) Gender: [ ] Male [ ] Female
2. Please indicate which category of user you belong to:
   [ ] Faculty [ ] Student
3. Frequency of library visit
   [ ] Regular [ ] Once in a week [ ] whenever needed [ ] I never use library
4. Why do you use your university library?
   [ ] Academic purposes
   [ ] Borrowing books from library
   [ ] Availing net facilities inside the university library
   [ ] Others
5. Does the library collection meet all your information need?
   [ ] Always [ ] Very often [ ] Sometimes [ ] Seldom [ ] Never

Section 2: ICT Features

6. You have access to internet at:
   [ ] Home [ ] University library [ ] Cyber café [ ] Others [ ] I do not access internet (please go to Q. 24)
7. How long have you been using the internet?
   [ ] 1-2 Year [ ] 2-3 Year [ ] 3-4 year [ ] If others, please mention here -----
8. How often do you use internet?
   [ ] Daily [ ] Frequently in a week [ ] Whenever needed [ ] Others
9. Why do you use internet?
   [ ] Using e-resources [ ] Entertainment [ ] News and sports [ ] Communication
   [ ] Academic purposes [ ] Using SNT's [ ] E-mail [ ] All of the above

10. How do you look for relevant e-resources on the internet?
    [ ] University/library website
    [ ] Web search engines
    [ ] Portals on the internet
    [ ] Online database with links to full-text
    [ ] Others
11. Which search engine do you prefer most?
    [ ] Google [ ] Yahoo! [ ] Altavista [ ] Others
12. Does the application of internet make research/study easier for you?
    [ ] Yes [ ] No
13. Measure the impact of internet on your academic activities
    [ ] Very low
    [ ] Low
    [ ] Medium
    [ ] High
    [ ] Very high

Institutional ICT services

14. Does your library have internet connection?
    [ ] Yes [ ] No
15. Does your library use paid electronic resources as well?
    [ ] No, they use only resources available free of charge
    [ ] Yes, they purchase e-resources for their user
    [ ] I do not know
16. Which resources do you consider to be the most important for the efficiency of your study?
    [ ] Electronic journals
    [ ] Electronic books
    [ ] OPAC
    [ ] Online database
    [ ] Internet browsing facilities
    [ ] Virtual reading facilities
17. Does your library charge for using ICT services?
    [ ] Yes [ ] No [ ] Nominal fees [ ] Charges only for using internet

18. What impact do you think electronic resources has on you
(1= Very low, 2= Low, 3=somewhat low 4=Medium, 5=Somewhat high, 6=High, 7=Very high)

Improving awareness of my disciplines	1	2	3	4	5	6	7
Improving ICT skills	1	2	3	4	5	6	7
Helping to prepare my class works	1	2	3	4	5	6	7
Promoting academic activities	1	2	3	4	5	6	7
Changing my reading habit	1	2	3	4	5	6	7

19. How would you rate the e-resource service performance of the library?
(1= Very low, 2= Low, 3=Somewhat low 4=Medium, 5=Somewhat high, 6=High, 7=Very high)

Availability of online resources	1	2	3	4	5	6	7
Coverage of my subject	1	2	3	4	5	6	7
Ease of access	1	2	3	4	5	6	7
Ease of use	1	2	3	4	5	6	7
Availability of computer facilities	1	2	3	4	5	6	7
Adequate bandwidth	1	2	3	4	5	6	7
Easy navigation to resources from library	1	2	3	4	5	6	7
Accommodation facilities	1	2	3	4	5	6	7
Helpfulness to ICT personnel	1	2	3	4	5	6	7
Overall user satisfaction	1	2	3	4	5	6	7

20. How satisfied are you with the overall electronic resource facilities of your university library?

[ ] Very satisfied [ ] Satisfied [ ] Dissatisfied [ ] Very dissatisfied
[ ] Don't know

21. Please indicate the problems you have been facing in using e-resources provided by your university library

[ ] Only a limited number of subject title
[ ] Do not have access from home
[ ] Slow download speed
[ ] Limited access to computers
[ ] Limited access to back issue
[ ] Difficulty in finding information
[ ] Unsuitable space, environment
[ ] Others

22. Please indicate which additional e-resources your library should subscribe for you

[ ]
[ ]
[ ]
[ ]

23. What recommendations would you provide to overcome the problems?
    [ ] Increase accommodation facilities
    [ ] Increase number of PCs with internet connection
    [ ] Need to build cyber center in the university to increasing access point
    [ ] Need to arrange training program for the users
    [ ] Subject coverage, more e-journals and e-books need to purchase
    [ ] If others, please specify
24. If you are not currently using e-resources and internet , please indicate the reasons for not using these services
    [ ] I do not know how to use them
    [ ] I do not know where to them
    [ ] I do not have any interest
    [ ] I do not find them useful
    [ ] Others

Thank you very much for your time in completing this survey.

Appendix-2 (Professional)

Section 1: General
Information about the library

1. Background information of the institution and library
Name of the institution :
Name of the library :
Year of Establishment :
Hours per day the library is open :
Number of days the library is open per week :

2. Is your library automated?
[ ] Yes
[ ] No
[ ] Partially automated

3. If your library is automated, please mention the names of the software being used in your library
[ ] CDS/ISIS
[ ] GLAS
[ ] LIBSYS
[ ] Open Source Software (OSS)
[ ] Produces by local developer/own organization (Please mention the name)
[ ] Others (Please mention the name)

4. Which of the following functions are automated in your library?
[ ] Acquisition [ ] Cataloguing [ ] Circulation control
[ ] Serial control [ ] Management information [ ] Inter-library loan
[ ] Library catalogue (OPAC) [ ] Others (please specify)

5. Does your library have internet facilities?
[ ] Yes
[ ] No

6. How is your library connected to the internet?
[ ] Dial-up [ ] ISDN [ ] DSL [ ] Cable modem [ ] VSAT [ ] others (please specify)

7. What is the bandwidth connectivity available to your library?
[ ] Dial-up to 56 K [ ] 64 kb [ ] 128 kb [ ] 256 kb
[ ] 512 kb [ ] 1 Mb [ ] Higher (please specify)

8. Which of the following ICT facilities are available in your library? Please tick in the appropriate column;

Hardware		**Operating system**		**Database Mang. System**		**Network and access**	
Desktop computer		Windows 2000/1998		Oracle		LAN	
Laptop computer		Windows NT		Microsoft access		WAN	
Scanner		Windows XP		SQL		VPN (Virtual Private Net)	
Laser printer		Linux		Others (Specify)		E-mail (Official, not just free service like Yahoo!	
Network printers		Others please					

		specify					

9. Which of the following web based services does your library provide to its clients?
(Please select all that apply)

Access to full-text documents in digital format; e.g. research reports and newsletters	
Web based current awareness services. Specify, if possible:	
Web access to in-house developed library databases/OPAC	
In-house online tutorials on how to use the information services	
Subscription of Web-based electronic resources, E-books, E-journals, databases, etc.	
Organized access to free subject-based information gateways/portals on the Internet	
Virtual reading facilities	
Access to digital resources (please the specific ones) e.g. AGORA, PERI, HINARI OARE, IEE, Springer. If others, please mention the name;	

Library Personnel

10. All the library personnel in your library have access to internet on their desktop?

[ ] Yes
[ ] No
[ ] Most of them have access to internet on their desktop
[ ] Very few of them have access to internet on their desktop

11. Methods of learning internet skills

Method	
Trial and error method	
Guidance from colleagues and friends	
Training from university library	
Self instruction	
External courses	

12. What impact do you think the internet has to improve your professional efficiency?

(1=Partially agree, 2=Agree, 3=Strongly agree, 4= No opinion, 5=partially disagree, 6= Disagree, 7=Strongly disagree

Increasing professional competency	1	2	3	4	5	6	7
Building confidence to providing services	1	2	3	4	5	6	7
Help to provide quick reference services	1	2	3	4	5	6	7
Availability of information	1	2	3	4	5	6	7
Improving information services	1	2	3	4	5	6	7
Improving the quality of the services	1	2	3	4	5	6	7
Expedited the service process	1	2	3	4	5	6	7
Use of conventional documents has decreased	1	2	3	4	5	6	7
Dependency on internet has increased	1	2	3	4	5	6	7
Upgraded knowledge and skill	1	2	3	4	5	6	7
Increased job satisfaction	1	2	3	4	5	6	7

Reduced workload	1	2	3	4	5	6	7

13. How far you enable to meet the information needs of users by using internet?

Opinion	
Can not say	
Not at all	
To a little extent	
To some extent	
To great extent	

14. How would you measure internet operating skills of yours?

[ ] Good
[ ] Average
[ ] Professional
[ ] Advanced
[ ] Poor

15. Which of the following ICT and information management areas are staffed by qualified personnel in your library? If adequate staffing or skills is lacking in an area, indicate if training is needed.

Areas	Confident	Training needed
Development and administration of databases and library systems		
Hardware maintenance		
Digital content management, including digital and virtual libraries		
Knowledge management		
Development and management of bibliographic databases		
Network administration		
Metadata management, including MARC		
Computer programming		
Web site/portal development and maintenance		

16. The following barriers to ICT use in my library?

Areas	1	2	3	4	5	6	7
Inadequate ICT hardware and software	1	2	3	4	5	6	7
Lack of budget for ICT	1	2	3	4	5	6	7
Low skills level of ICT users	1	2	3	4	5	6	7
Lack of staff qualified in ICT among library personnel	1	2	3	4	5	6	7
Difficulty to recruiting and retaining qualified ICT staff	1	2	3	4	5	6	7
Reluctance among staff to use ICT	1	2	3	4	5	6	7
Lack of commitment by top management in my institution	1	2	3	4	5	6	7

(1=Partially agree, 2=Agree, 3=Strongly agree, 4= No opinion, 5=partially disagree, 6= Disagree, 7=Strongly disagree

17. Does your library arrange any web based training program for improving your efficiency in library operations?

[ ] Yes
[ ] No
[ ] Sometimes
[ ] others

18. Are you satisfied to providing services with the help of Internet?

[ ] Satisfied
[ ] Very satisfied
[ ] partially satisfied
[ ] Not satisfied

19. Does your library have any cyber corner for the students?

[ ] Yes [ ] No

20. What troubles do you feel while using the internet in library?

[ ] Slow access speed
[ ] Difficulty in finding relevant information
[ ] It takes too long to download pages
[ ] Electricity problem
[ ] Others, please specify

21. Do you think internet can replace library services?

[ ] Yes
[ ] No

If yes please, explain how

22. If you have any additional comments or suggestions about internet services of your library, please write below.

Thank you very much for your time in completing this survey.
Sincerely,

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