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Md. Nazim Uddin
International Centre for Diarrhoeal Disease Research, Bangladesh (icddr,b), nazimuddin@icddrb.org

M. Al Mamun
International Centre for Diarrhoeal Disease Research, Bangladesh (icddr,b), almamun@icddrb.org

Md. Shafiur Rahman
International Centre for Diarrhoeal Disease Research, Bangladesh (icddr,b), shafi@icddrb.org

Adoption and Usage Of Web-Based Library Resources and Services: an Investigation of icddr,b Library in Bangladesh

 Dr. Md. Nazim Uddin[1], M. Al Mamun[2], Md. Shafiur Rahman[3]

[1] Senior Manager, Library and Information Services Section, International Centre for Diarrhoeal Disease Research Bangladesh (icddr,b), Mohakhali, Dhaka, Bangladesh; e-mail: nazimuddin@icddrb.org

[2] Manager, Library and Information Services Section, International Centre for Diarrhoeal Disease Research Bangladesh (icddr,b), Mohakhali, Dhaka, Bangladesh; e-mail: almamun@icddrb.org

[3] Senior Library Officer, Library and Information Services Section, International Centre for Diarrhoeal Disease Research Bangladesh (icddr,b) , Mohakhali, Dhaka, Bangladesh; e-mail: shafi@icddrb.org

Abstract

Purpose – The core purpose of this study is to explore the web-based library services available in icddr,b Library. In addition, this research aims to investigate the adoption and utilisation of subscribed, registered and open access e-resources by the scientists and researchers at icddr,b Library. The existing facilities that influenced smooth usage of web-based information services of icddr,b library have been assessed. The study involved scientists and researchers of icddr,b.

Design/methodology/approach – The study used a mixed-method research design using case study approach. Both qualitative and quantitative approaches were used. An online survey was conducted in June 2017 to ascertain the present status of web-based library facilities and services of icddr,b library. The online survey questionnaire link was distributed through "Google Forms" directed to the most potential researchers (557) of icddr,b.

Findings – The findings revealed that participants were moderately aware of the library subscribed and registered e-resources. The study also explored key challenges hindering effective usage of the databases in the library. It discovered that lack of awareness of the databases, low speed internet connectivity, inadequate online databases and lack of skills in searching the databases. Suggestions were also made on the way forward in combating these challenges. The study also indicated that e-resources are very useful to researchers, PubMed and Hinari are the most used databases. Furthermore, it was strongly recommended that the library should market and explore more online resources to attract more users and to do more effective research at icddr,b.

Study Limitations: The present study is confined to the current status and trend of using e-resources used by the researchers of icddr,b. The study highlights on the types of web-based resources and services available in icddr,b Library and a small number of samples (213) are covered in this study.

Practical implications: Many years later, the icddr,b library will receive a greater impact than present in terms of facilities and services. Other libraries in Bangladesh will also be motivated to develop Intranet site and provide library services through Intranet in respective organization. Ultimately, new system of libraries will be developed and users will be benefited using this new system.

Social implications: Library community and others society of Bangladesh will be benefited in reading and using this article.

Originality/value – Many papers have been written on electronic resources, but this study specifically focused on subscribed, open access and registered online resources, and it is the first time that an investigation has been made on the use of electronic resources by library users in icddr,b library. The results of the study could be useful for icddr,b Library and other medical libraries in Bangladesh in ensuring that there is a high use of web-based library facilities and services. So that other libraries in Bangladesh will be inspired and encouraged to introduce digital tool facilities and services in libraries of Bangladesh.

Keywords: Medical Library, Internet, Computer Communications Network, Digital Library, Web-based services, Bangladesh

Introduction:

In the present ICT (Information and Communication Technologies) based information society, physical libraries are in the transition phase moving to revolutionary changes and modifications in new hybrid libraries and innovative web-based library services. ICT has revolutionized web-based library services and are treated as information gateways for accessing digital information resources in the modern library environment. During the last few decades, information technology became a major factor in the field of modern and digital library services. The emergence of Internet and wide availability of affordable library web sites have created opportunities for innovative library facilities and services. The web technology and Internet has rehabilitated and transformed the way of organizing

information in libraries, i.e. preservation, retrieval and dissemination of information. 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. The development in ICT has changed the way a library communicates with its users and supplies services. Constant updating and synchronization with the latest global technological trends is the essential to provide efficient library services (Rajalaxmi & Kumara, 2014). icddr,b library is not behind in this race of web technology. In this era of 21st century Internet and web, the vision of icddr,b library is to build a modern world-class library and offer a various innovative and web-based library services to their clients (Uddin, Rahman, Mamun, & Khandaker, 2015). icddr,b library provides quicker and user oriented ICT integrated services with the use of the Library Intranet site. This study attempts to assess the web-based information retrieval pattern of scientific staff members of icddr,b. The study also identifies the major challenges that promote or hinder the use of web-based information resources and services.

Literature Review:

The revolutionary changes and developments in the field of ICT have created new library models which are called by different names such as digital libraries, virtual libraries, hybrid libraries and digital repositories with a particular emphasis on web-based library services. While there is at present a sufficient amount of literature carrying out the information seeking and retrieval pattern of web-based library services in the electronic environment and how it provides web access to its collections and the problems faced by the users in accessing web-based library services.

Mohamed and George conducted an experiment in 2010 to investigate through a structured questionnaire survey of 104 full-time doctoral students in Calicut University. This study reveals that most of the doctoral students search the web. It suggested, the development of strategies and policies that could make better use of web-based resources for education and research (Mohamed & George, 2010).

Zarei & Abazari analyzed a survey of web-based library services offered by Asian national libraries in 2010, exploring that National Library of Singapore which had the first rank in providing its services via a web site for its users and was the only national library in Asia that

provides more than half of its services (52.29 per cent) via the web site (Zarei & Abazari, 2011).

Graef explored the process of electronic information networks and observed that the library staff moved into 'mini libraries' within business units after the closure of physical libraries. The study emphasized that offering a variety of value-added services, that make the effective management of electronic resources and services in modern libraries (Graef, 1998).

Tadasad et al. assessed the use of Internet by 193 undergraduate students of engineering and observed that internet use was confined to recreational purposes and its supporting to academic requirements has not been realized by the students (Tadasad, Maheswarappa, & Alur, 2003).

Mostofa in 2011 examined Internet access and use among business students of a private university of Bangladesh and found a high percentage of internet use among students. More than 56 percent of the respondents use the internet for educational purposes (Mostofa, 2011).

Pandey & Panda outlined the emerging concepts of social semantics digital library and explores the potential of using semantic web technologies for the digital libraries. The paper also provided an overview of semantic tools and services available and categorization of different types of semantic tools and services (Pandey & Panda, 2015).

Shabna & Mohamed Haneefa investigated the web-based information retrieval pattern of the doctoral students in universities in Kerala. It revealed that the majority of students use e-journals and e-books. E-mail, World Wide Web (WWW) and Wikis are the most widely used Internet services by their students (Shabna & Mohamed Haneefa, 2016).

Krishnamurthy discussed a study on important web-services of online resources, online public access catalogue (OPAC), consortia and how these sources are helpful in building digital collection in Indian Statistical Institute Bangalore library (Krishnamurthy, 2005).

Begum attempted to give a bird's eye view of the present scenario of library automation in the East West University and discussed the satisfaction level of its users after improving the automation system in this era of information technology (Begum, 2009).

A study carried out by Afroz in which the author discussed various key issues of BRAC University Library such as Integrated Library System using Koha, Institutional Repository using DSpace, Discovery Tool using VuFind, Content Management System using Drupal, BRACU Library's Mobile Interface, etc. (Afroz, 2014).

From the above literature review, it is clear that there is a lack of studies on the Web-based information services in developing countries like Bangladesh. Therefore, the investigators realized a need to assess the Web-based information retrieval pattern of the scientists in the icddr,b.

Objectives of the study:

The main objective of the study was to analyze and evaluate the use of web-based resources by the researchers and scientists of icddr,b along with their problems and prospects. Some of the imperative aims and objectives are as follows:

1. To ascertain the extent of availability of web-based services and resources in the icddr,b library.

2. To identify the different purposes for which the e-resources are used by the researchers.

3. To examine the impact of e-resources on the various activities like academic, learning and research.

4. To find out the awareness and use of e-resources which examine usage patterns, acceptance, perceived importance and satisfaction with e-resources.

5. To discover and trace out the problems in using e-resources by the scientific staff.

6. To suggest appropriate measures for the improvement of the management and utility of web-based information resources and services.

Research Methodology:

This study is mainly based on the personal observations and experiences of the authors. Both qualitative and quantitative methods (mixed method design) have been used to carry

out the study. The investigators traced various old data from icddr,b library official files. An extensive literature search has been conducted through Google, Scopus, Emereld, Hinari, ScienceDirect, Indian Journals, Web of Science and Google Scholar databases to find out various full-texts of journal articles, documents, reports and book chapters of the research areas. Besides, in order to investigate how researchers of icddr,b use web-based services and resources, an online survey was conducted in June 2017 to ascertain the present status of web-based library facilities and services of icddr,b library. The online survey questionnaire link was distributed through "Google Forms" directed to the most potential researchers of icddr,b. The sample of the study reveals that a total of 557 online survey links were distributed among the users of icddr,b; 317 users responded, showing a response rate of 56.91 percent. Finally, the investigators found a total 213 questionnaires were suitable for analyzing in this study. Quantitative data was analyzed using SPSS (Statistical Package for the Social Sciences) version 20 and Microsoft Excel spreadsheet, and qualitative data were examined using thematic analysis. The investigators have also used EndNote X8 software for managing the references of this article.

Scope and limitations of the study:

The scope of the present study is primarily confined to the present status and trend of e-resources used by the researchers of icddr,b. The study focus on the types of web-based resources and services available in icddr,b Library. However, the present study has the following limitations:

- The study considered only the present status and trend of web-based services being used by the icddr,b scientists.
- A very small number of samples (213) are covered in this study.

Concept of Library websites:

World Wide Web (WWW) is a global network of internet servers providing access to documents that allows content to be interlinked, locally and remotely. It is now widely used as one of the primary means of disseminating research findings and information through digital libraries. *"A website is a collection of interlinked web pages on a related topic, usually under a single domain name, which includes an intended starting file called a "home page". From the home page, one can get to all the other pages on the website. As defined, each site*

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is owned and managed by an individual, company or organization" (Jeyshankar & Babu, 2009).

Web-based library services:

Web-based library services are provided using Internet/Intranet as a medium and library website as a gateway with the help of web-based library automation software. Web-based library service is another vital feature that provides library facilities and services through Internet and library websites/Intranet sites (Madhusudhan & Nagabhushanam, 2012). In the current digital era, various web-based library services are provided to users in electronic form such as: document delivery service; web-based reference tools; current awareness service; ask-a-librarian; current awareness bulletins; SDI services; bibliography of new arrivals; social networking service; bibliographic databases; circulation; reservation of document; cancel of reservation of document; renewal of loan documents; web-scaled search service; web OPAC; electronic journals (subscribed); online databases; search multiple catalogs (federated search); digital collections; Index to journal articles; article alert service; E-mail based services; online helpdesk services, library discussion forums (listserv); web-based FAQ; web 3.0 services (semantic web, cloud computing); library wiki (Madhusudhan & Nagabhushanam, 2012).

icddr,b Library: At a Glance

Established in 1960 and internationalised in 1978, icddr,b is governed by the 'Ordinance No LI of 1978' enacted by the Government of the Peoples' Republic of Bangladesh (GoB). The icddr,b Library was established in 1962. At present, icddr,b library is running as a separate section in the name of Library and Information Services Section (LISS) under direct management of icddr,b. (Uddin et al., 2015). The current infrastructure and environment of icddr,b library is attractively furnished and provides a peaceful environment supported by knowledgeable and approachable staff.

Integrated Library System of icddr,b Library: From July 2015, 'Liberty' a proprietary Integrated Library System (ILS) software was introduced in the library to manage digital and print resources and other library activities and services. Liberty is a fully web-based information management solution. It enables information searching and manages basic library activitiess.

Institutional Knowledge Repository (IKR) of icddr,b:

icddr,b library has its own Institutional Knowledge Repository (IKR) using DSpace open source software. Since 2005, icddr,b maintains this Institutional Knowledge Repository (IKR). The Figure 1 illustrates the total number of documents as of 31 January, 2018, in which it shows the maximum number of documents i.e. 5479 documents are treated as icddr,b External Publications and they fall under the community named icddr,b External Publications of IKR.

Figure 1: Total uploaded documents of icddr,b IKR
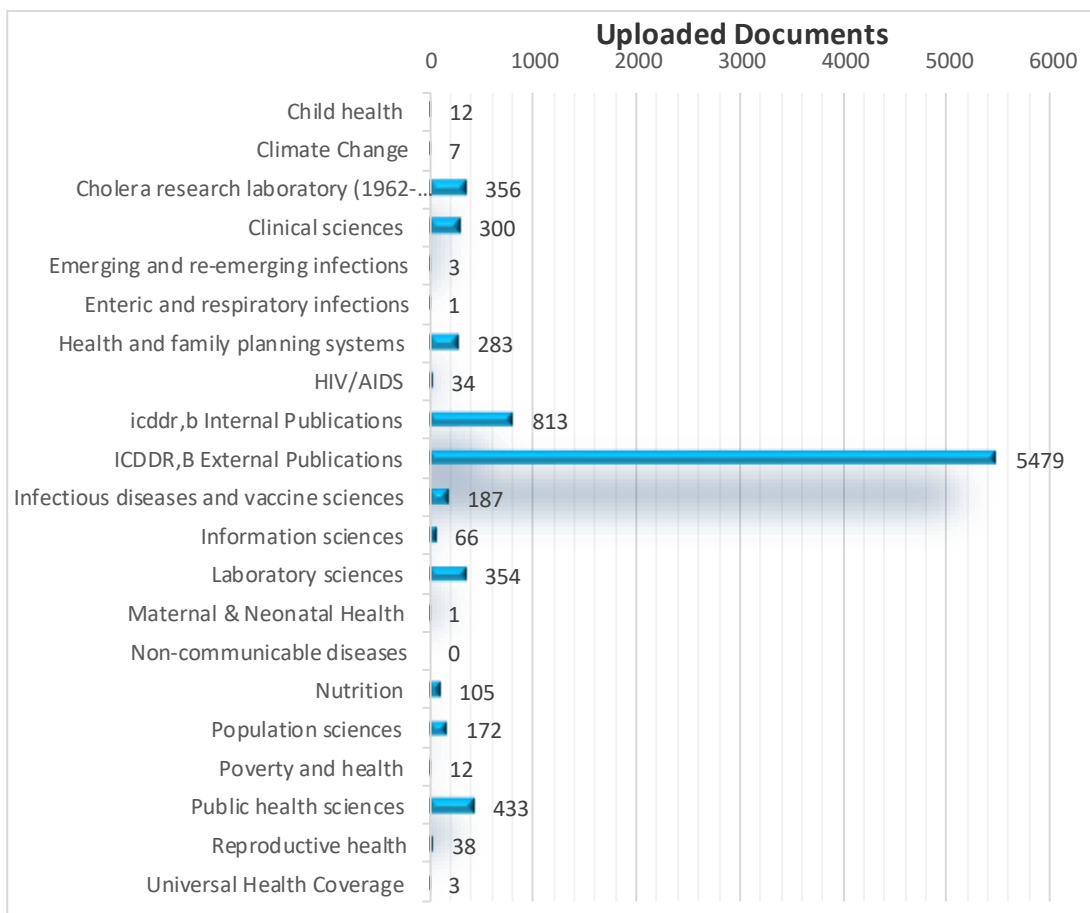
Source: http://dspace.icddrb.org/jspui/community-list (accessed 02 February 2018)

icddr,b Library Intranet site:

Library Intranet site is the main point of access and catalyst for new web-based library resources and services. It also serves as an integrated interface to a wide variety of digital resources and web-based library services for users over a network (Letha, 2006). All the useful links of digital resources are linked here for researchers and can be accessed through icddr,b domain and Virtual Private Network (VPN). The icddr,b library Intranet site is seen below in Figure 2.

Figure 2: Web-page of the icddr,b library Intranet site
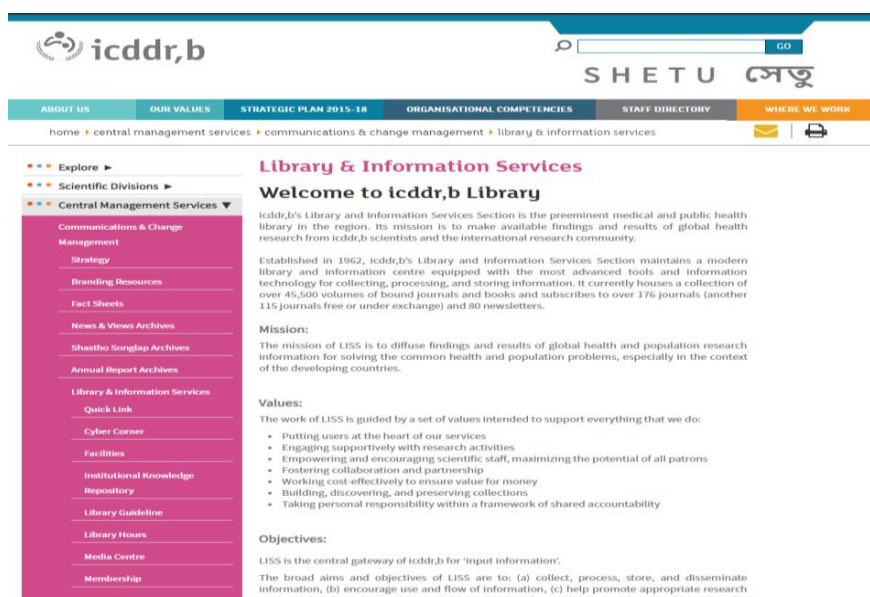
Web-based services of icddr,b Library: icddr,b Library has specialised by providing web-based services through the library Intranet site. icddr,b Library provides web-based services to its users through E-mail and Intranet site . Web-enabled services are available only to users who have access through PCs/Laptops connected to icddr,b domain. The Table 1 explores the available web-based services of icddr,b library.

Table 1: Web-based library services of icddr,b Library

SL. No.	Web-based services

01.	Web OPAC
02.	Online circulation service
03.	Online reservation service
04.	Online renewal of loan document
05.	Online status of reserved documents
06.	Mobile based library Services
07.	RFID based library Services
08.	Liberty map services
09.	Virtual Reference Services (VRS)
10.	Electronic document delivery services
11.	Web-scaled search service through EBSCO
12.	Online bulletins through Root Circulation
13.	Online new acquisition list
14.	Electronic journals (digital library consortium)
15.	Digital collections building Institutional Repository
16.	Electronic current awareness service
17.	Research Data services
18.	Online Journal Citation Report services
19.	Remote access (MyAthens) to library resources
20.	E-mail based reference management service
21.	E-mail based Scientometric Services
22.	WiFi and Internet services

Web-based resources of icddr,b Library:

The Library enables users to access several full texts web-based resources. The library is a member of Library Consortium of Bangladesh (LiCoB) formerly BIPC and UGC Digital Library (UDL) Consortium. Table 2 reveals the name of various online journals of icddr,b Library.

Table 2: Web-based resources of icddr,b library

Sl. No.	Description of the e-resources/ Online databases/e-platforms/research tools
1.	Web of Science Core Collection: Citation Indexes (Science, Social Sciences, Arts and Humanities, Conference Proceedings, Emerging Sources)
2.	ProQuest- provides access to 1934 journal titles based on health sciences
3.	JSTOR- provides access to more than 12 million academic journal articles, books, and primary sources in 75 disciplines
4.	UpToDate- an online based physician-authored clinical decision support service , which clinicians trust to make the right point-of-care health decisions
5.	Journal Citation Reports- offer a systematic, objective means to critically evaluate the world's leading journals that delivers quantifiable statistical information based on citation data
6.	Ulrichsweb- Provides bibliographic and publisher information on more than 300,000 periodicals of all types–-academic and scholarly journals, Open Access

	publications, refereed (i.e. peer-reviewed) titles, popular magazines, newspapers, newsletters, and more--from around the world
7.	ASM Journals- the most prominent publications in the field, delivering up-to-date and authoritative coverage of both basic and clinical microbiology
8.	Cochrane Library - contains different types of high-quality, independent evidence to inform healthcare decision-making
9.	EBSCOHost - an integrated service that combines digital archives, reference databases, subscription management, online journals, eBooks, linking services and A-to-Z solution
10.	Wilely Online e-books- provides online access to more than 24,000 e-books
11.	Springer Nature e-journals - access to millions of scientific documents from e-journals, e-books, series, protocols and reference works
12.	Cambridge Journals Online- provides online access to journals in the areas of engineering, astronomy, biology, physics, mathematics, medicine, politics, sociology, history, economics, anthropology, and security studies
13.	University of Chicago Press- online access to more than 80 scholarly journals
14.	EBSCO Discovery Library Search- provides better, easier access to the databases, journals, conference proceedings, magazines, newspapers, e-books, images, videos and other resources subscribed by icddr,b library
15.	Wiley Online e-journals - provides online access to more than 1,600 e-journals
16.	ScienceDirect through Hinari- provides online access to more than 20,000 e-journals and e-books
17.	Indian Online Journals- online access to more than 350 scholarly journals
18.	Hinari- provides access up to 14,900 e-journals, 60,000 e-books, and 105 other information resources
19.	AGORA- provides a collection of up to 13,700 e-journals and 26,500 e-books
20.	OARE- provides access to a collection of up to 11,500 scientific journals, 27,000 e-books, 40 databases
21.	ARDI- provides a collection of up to 7,000 e-journals and 21,500 e-books
22.	GOALI- provides a collection of up to 1,600 e-journals and 2,300 e-books
23.	EndNote Reference Management Service
24.	Plagiarism Software (ithenticate)
25.	Guideline for how to avoid predatory publishing
26.	Open Access Resources

Research findings and results:

This section deals with the analysis and interpretation of all the responses received from the users. Based on adopting web tools and digital services of icddr,b Library, an online survey was made and a questionnaire was distributed among 367 researchers and scientific staff at icddr,b. Finally, to assess the prevailing conditions, availability of web-based resources and other facilities, particularly of web-based-services on various aspects, a total of 213 responses have been taken into account in the survey.

Age of the respondents

The Age wise distribution of respondents is shown in Table 3. The age of the surveyed libraries' respondents is arranged in different age groups. It is clear from the table that majority of the respondents numbering 100 (46.9 %) are in the age group of 31 – 40 years.

Table 3: Frequency of age of the respondents

Age group				
Age group	Frequency	Percent	Valid Percent	Cumulative Percent
21-30	43	20.2	20.2	20.2
31-40	100	46.9	46.9	67.1
41-50	50	23.5	23.5	90.6
Valid 51-60	17	8.0	8.0	98.6
61-above	3	1.4	1.4	100.0
Total	213	100.0	100.0	

Sex of the respondents

The data collected is presented in Figure 3 shows that in terms of sex, 152 (71.4%) of the respondents are male and 61 (28.6%) are female.

Figure 3: Percentage of sex of the respondents

Figure 3: Gender of the respondents
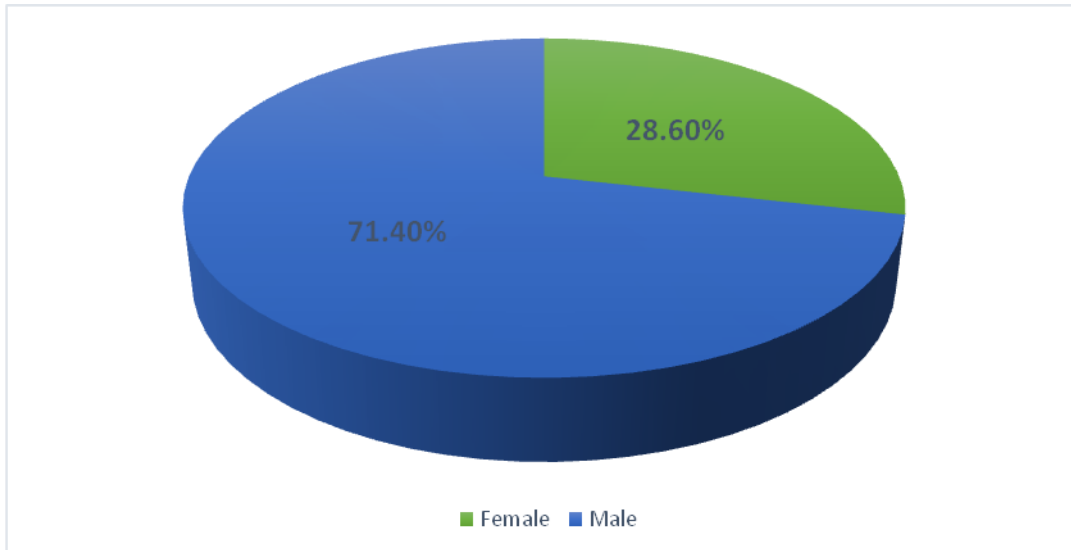
Academic Qualifications

The qualifications of the respondents are shown in Figure 4 and provide the details of the educational qualifications of the respondents. It is found that maximum respondents are from Masters group 168 (78.9%) followed by the group PhD 20 (9.4%).

Figure 4: Academic qualifications of the respondents
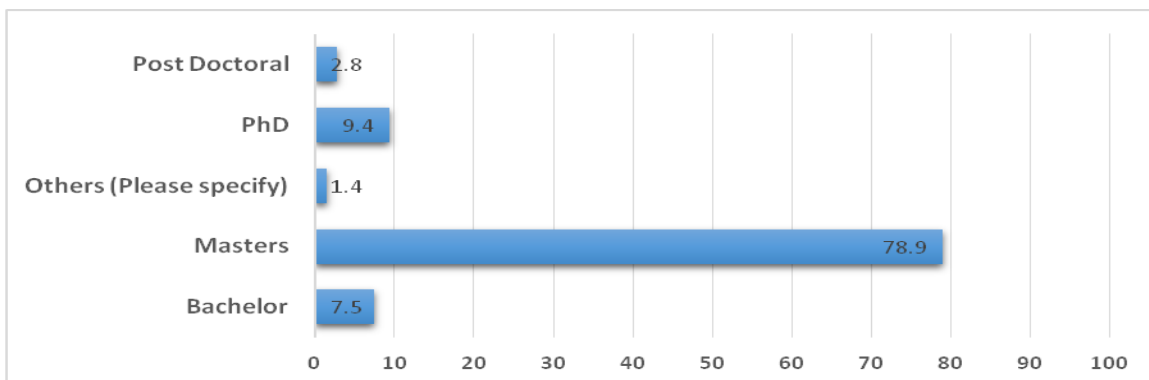
Location of the library

The respondents were asked about the location of the library. It is revealed from the Table 4 that almost all 99.5% the respondents are familiar about the location of the library.

Table 4: Frequency about location of the Library

		Frequency	Percent	Valid Percent	Cumulative Percent
	No	1	.5	.5	.5
Valid	Yes	212	99.5	99.5	100.0
	Total	213	100.0	100.0	

Library impression at first look

A question about library impression at first look was asked to the respondents as shown in Figure 5. The most of the respondents 99 (46.5%) remarked as "Excellent" followed by 41.3% expressed as "Very good".

Figure 5: Library impression at first look
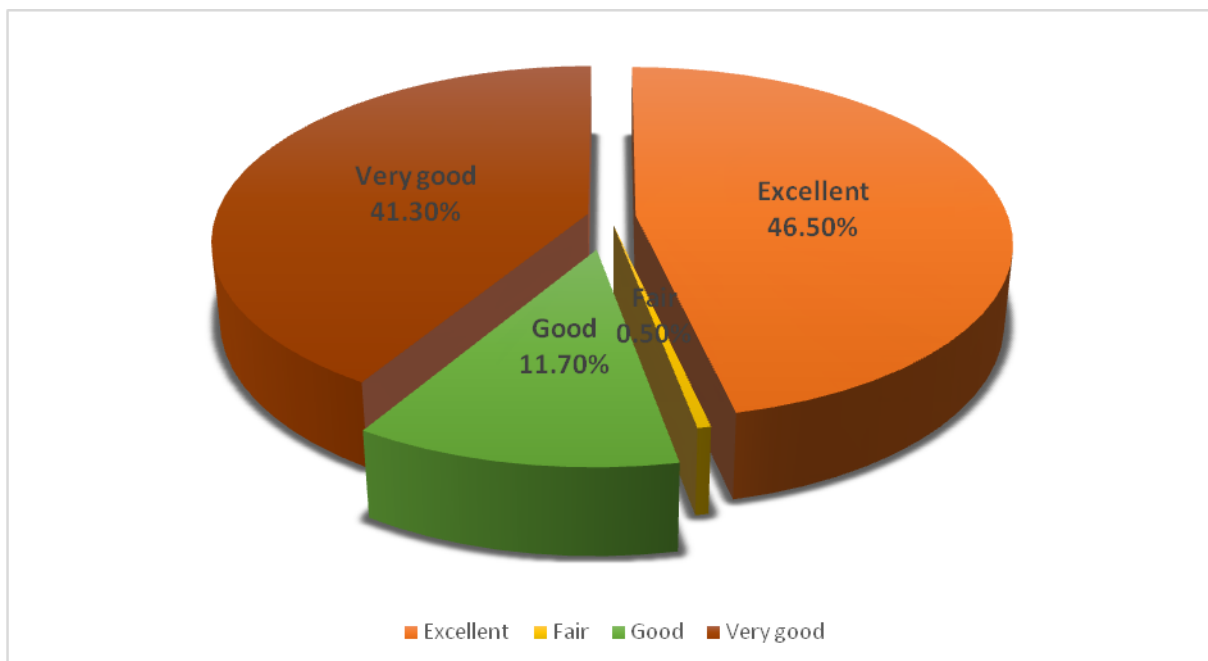
Possession of library card

The respondents were asked whether they have a library card. It is revealed from the Table 5 that a total of 37.6% the respondents have library cards. It is mentionable that users do not need a library card to access web-based library services. But obtaining library card is important for those who would like to borrow print copies of books, journals, reports and other facilities which are not available electronically.

Table 5: Status of obtaining library card

		Frequency	Percent	Valid Percent	Cumulative Percent
	No	133	62.4	62.4	62.4
Valid	Yes	80	37.6	37.6	100.0
	Total	213	100.0	100.0	

Frequency of library visit

The Figure 6 indicates that 129 (60.6%) of respondents are visiting the library less than once a month whereas only 6 (2.8%) of respondents are browsing the library on a daily basis.

Figure 6: Frequency of visiting icddr,b library in person
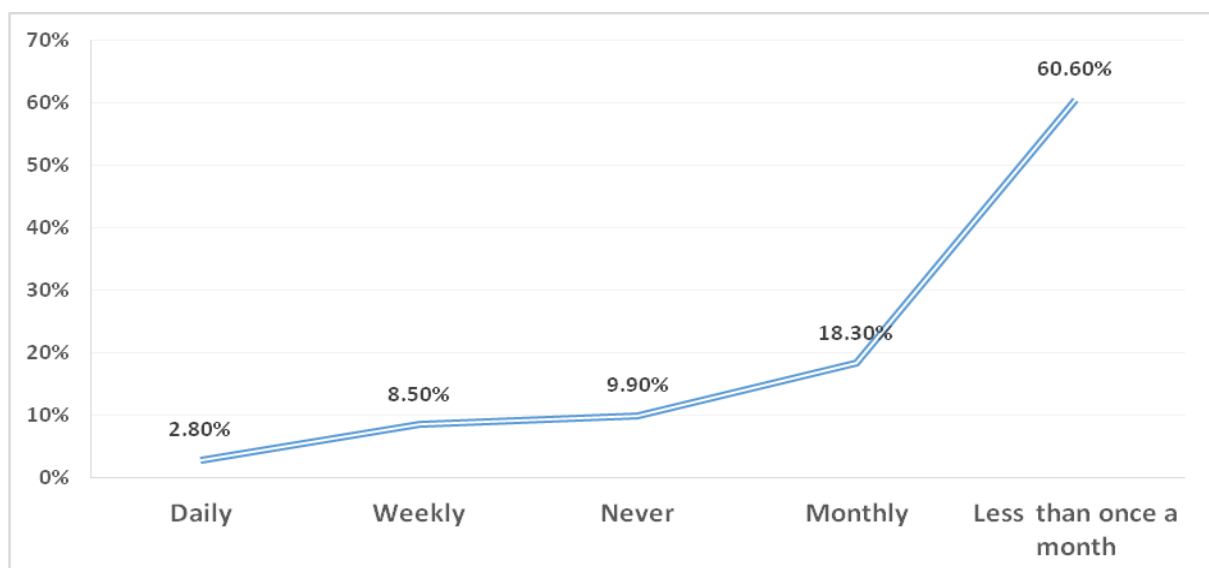
Frequency of visiting library Intranet site

Respondents were asked to know about the frequency of accessing the library Intranet site. The data collected and presented in Figure 7 demonstrates that a majority of the respondents 60 (28.2%) accessed Intranet web-resources less than once a month followed by 18.30% for more than once weekly.

Figure 7: Frequency of visiting library Intranet site
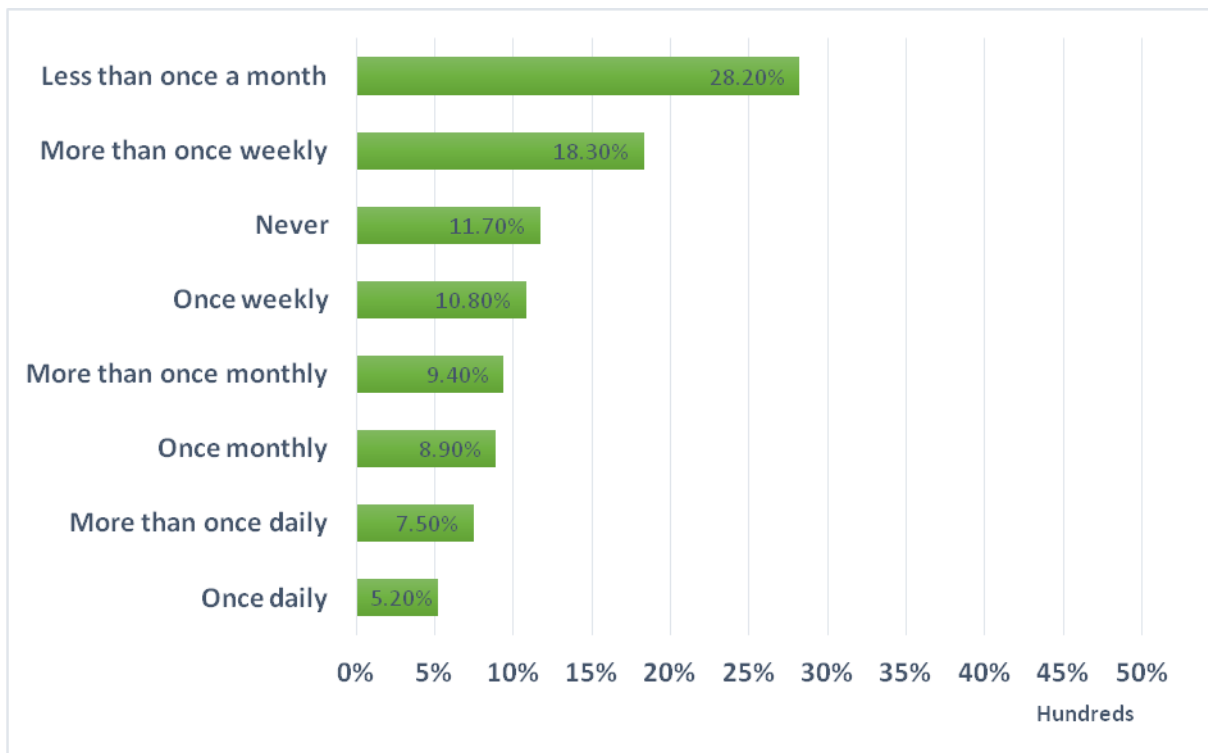
Frequency of purposes of visiting to library

The purpose of library visits of the respondents is shown in Figure 8. It may be seen from the figure that majority 55.9% of the respondents visiting library for 'Research Activities' followed by 43.7% of the respondents for reference work, where multiple responses were allowed in the questionnaire.

Figure 8: Frequency of purposes of visiting to library
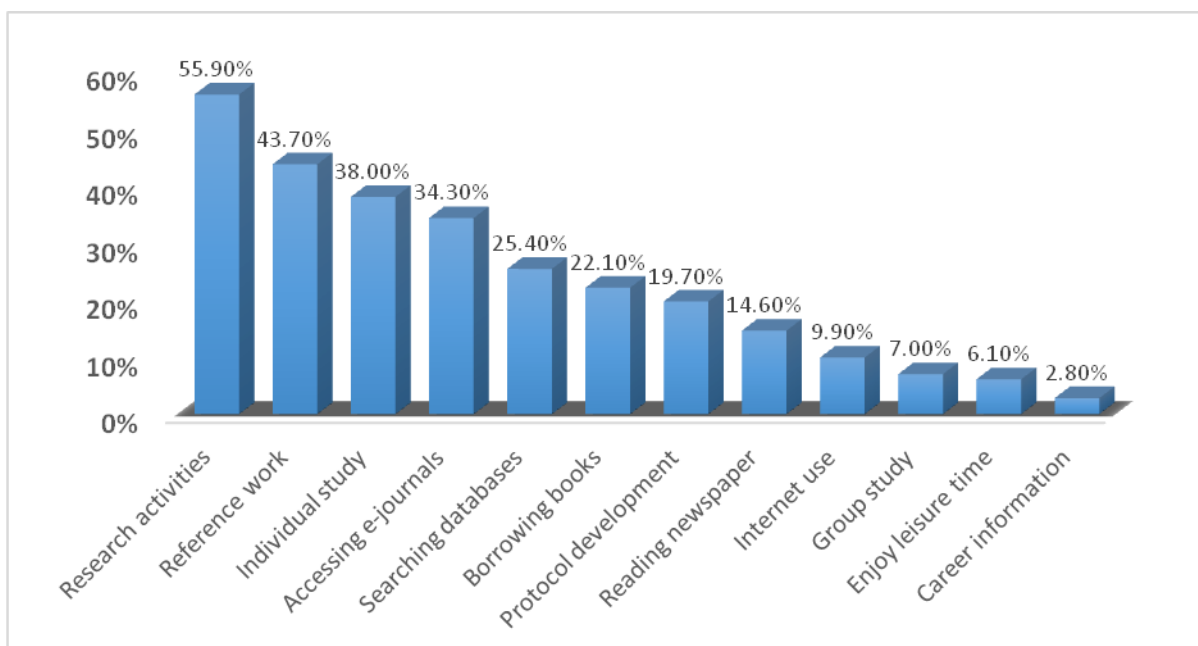
Satisfaction of web-based library facilities and services

The respondents were asked to indicate their satisfaction with the web-based library facilities and services in 5-point ranking scale from 'Excellent' to 'Poor'. Table 6 shows the descriptive statistics of library facilities and services. It has been observed from Table 6 that 'Overall library environment' with highest mean value (3.97) was ranked as the first which is followed by 'icddr,b new publications posted in weekly bulletin' with a mean value of 3.93 ranked second.

Table 6: Vivid statistics for the satisfaction level of web-based services

Types of services	N	Minimum	Maximum	Sum	Mean	Std. Deviation
Overall library environment	213	1	5	846	3.97	.874
icddr,b new publications posted in weekly bulletin	213	1	5	837	3.93	.916
Reading facilities	213	1	5	834	3.92	.923
Image of new arrivals	213	1	5	818	3.84	.948
Accessing to online journals through Intranet page	213	1	5	804	3.77	.984
Reference service	213	1	5	799	3.75	.971
Accessing online database through Intranet page	213	1	5	793	3.72	.953
Newspaper service	213	1	5	791	3.71	.925
Accessing e-books through Hinari	213	1	5	777	3.65	1.001

The **Vivid Statistics** header spans the table.

	213	1	5	773	3.63	.873
Collection of e-resources	213	1	5	773	3.63	.873
Reference management service	213	1	5	769	3.61	.933
Referral service	213	1	5	768	3.61	.924
Institutional Knowledge Repository of icddr,b	213	1	5	766	3.60	.914
Literature search training	213	1	5	765	3.59	.960
WiFi service	213	1	5	761	3.57	.957
Guidance for accessing online resources	213	1	5	760	3.57	.967
Trouble shooting of EndNote and training	213	1	5	759	3.56	.987
Citation and impact factor analysis service	213	1	5	748	3.51	.965
Information literacy training	213	1	5	747	3.51	.925
Internet use through mobile/laptop/tab	213	1	5	744	3.49	1.026
Discovery of e-resources training	213	1	5	742	3.48	.930
Net browsing from cyber corner	213	1	5	740	3.47	.964
Hours of operation	213	1	5	720	3.38	.932
Reservation of books through OPAC	213	1	5	712	3.34	.874
Searching through OPAC	213	1	5	708	3.32	.913
Find out h-index	213	1	5	704	3.31	.955
Photocopying and printing services	213	1	5	694	3.26	.934
MyAthens service	213	1	5	665	3.12	.954
Circulation service (Borrow/reserve books/initial query)	213	1	5	633	2.97	1.209
Valid N (listwise)	213					

Scale: [5 = Excellent; 4 = Very good; 3 = Good; 2 = Fair; 1= Poor]

Library impression at first look

Users were asked what were their first impressions of the Library. Figure 9 depicts that most of the respondents, 108 (51%) rated it "Very good" followed by 22% expressed as "Excellent".

Figure 9: Percentage of evaluation of library impression at first look
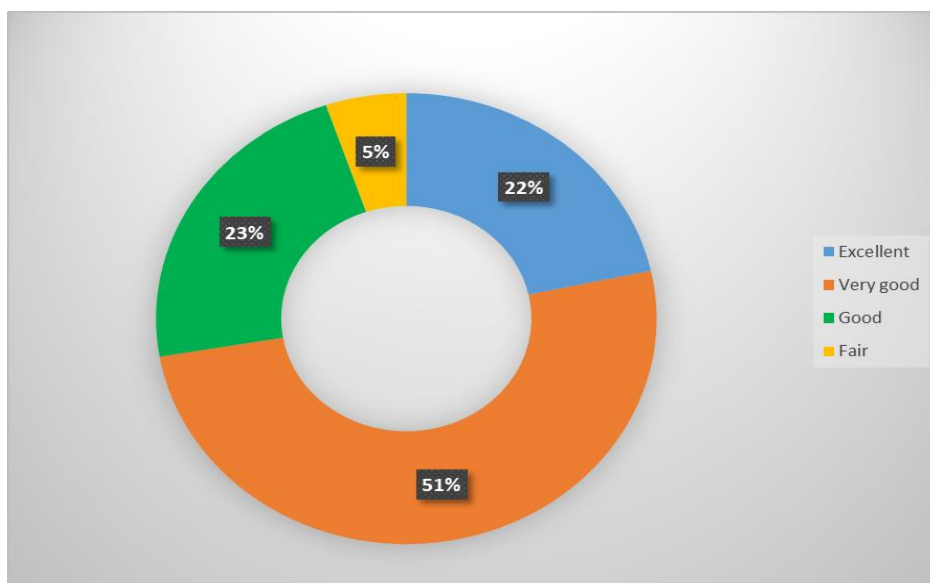
Evaluation of web-based library services

The respondents were asked to indicate their satisfaction with the web-based library facilities and services. Table 7 depicts the descriptive statistics of using status of various online resources. It has been observed from the Table that 'PubMed' with highest mean value (.90) was ranked as the first followed by 'Hinari' with a mean value of .74 ranked second position where multiple responses were permitted.

Table 7: Vivid statistics for using of web-based resources:

Vivid Statistics						
Types of platforms/databases	N	Minimum	Maximum	Sum	Mean	Std. Deviation
PubMed	213	0	1	191	.90	.305
Hinari	213	0	1	157	.74	.441
Google Scholar	213	0	1	150	.70	.457
PubMed Central (PMC)	213	0	1	111	.52	.501
ResearchGate	213	0	1	100	.47	.500
[PLoS Journals	213	0	1	97	.46	.499
BioMed Central (BMC)	213	0	1	93	.44	.497
Wiley Online Library	213	0	1	58	.27	.446
JSTOR	213	0	1	57	.27	.444
Springer Link	213	0	1	44	.21	.406
ISI Web of Science	213	0	1	40	.19	.391
Cochrane Library	213	0	1	37	.17	.380

Scopus through Hinari	213	0	1	31	.15	.353
AGROA	213	0	1	29	.14	.344
BanglaJOL	213	0	1	27	.13	.333
Cambridge University Press	213	0	1	21	.10	.299
Indian Journals	213	0	1	20	.09	.292
POPLINE	213	0	1	18	.08	.279
ProQuest	213	0	1	13	.06	.240
Institutional Knowledge Repository (IKR)	213	0	1	12	.06	.231
CINAHL through Hinari	213	0	1	11	.05	.222
UpToDate	213	0	1	9	.04	.202
DOAJ	213	0	1	8	.04	.191
Ebscohost	213	0	1	4	.02	.136
[ARDI	213	0	1	3	.01	.118
Valid N (listwise)	213					

Satisfaction level with web-based resources and services

A question about satisfaction level with web-based resources and services was asked to the respondents as shown in Figure 10. Most of the respondents 46.5% remarked as "Pretty satisfied" followed by 27.70% expressed as "Satisfied".

Figure 10: Percentage of satisfaction level of web-based resources
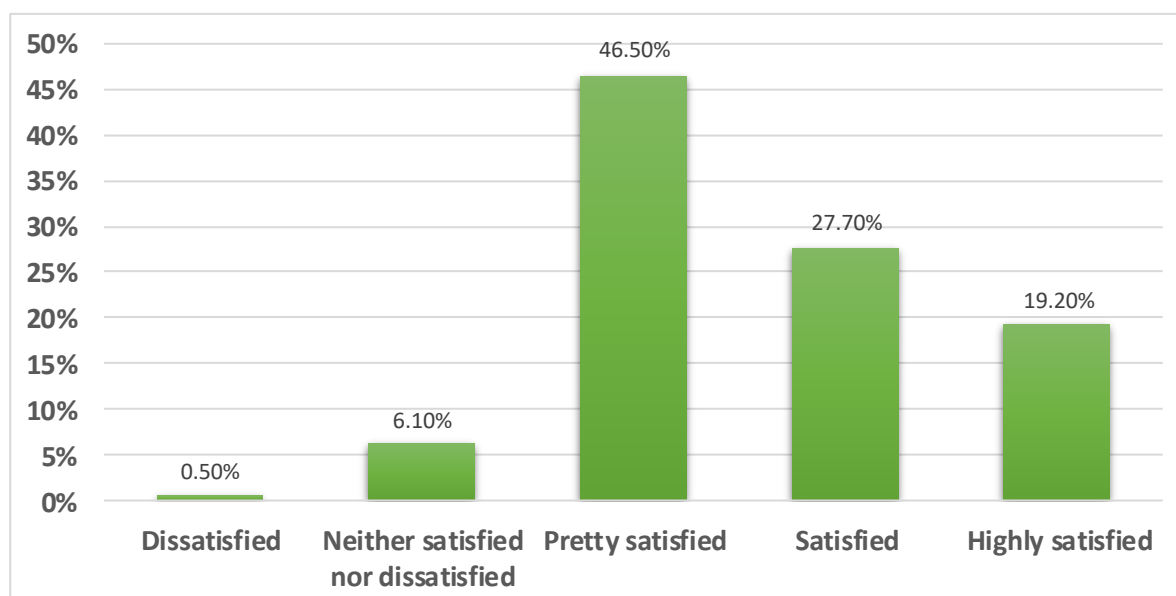
Evaluation of online document delivery services

A question about evaluation level with web-based resources and services was asked to the respondents as illustrated in Figure 11. Most of the respondents 53% remarked as "Excellent" followed by 34% expressed as "Very good".

Figure 11: Percentage of satisfaction level of online document delivery services
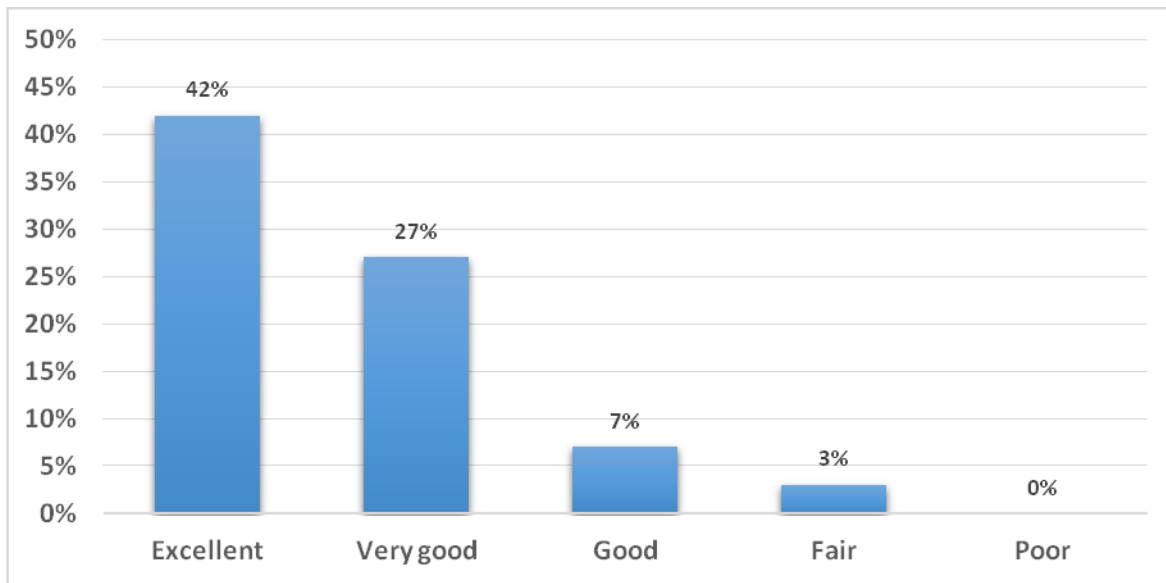
Attitude of library staff members for delivering library services

The respondents were asked to indicate their satisfaction in receiving library facilities and services. Table 8 depicts the frequency of library staff members' attitude of delivering library services where 80 (37.6%) respondents evaluated as 'Very good' of receiving library services.

Table 8: Evaluation of library staff members in receiving library services

	Satisfaction Level	Frequency	Percent	Valid Percent	Cumulative Percent
	Excellent	68	31.9	31.9	31.9
	Fair	13	6.1	6.1	38.0
Valid	Good	51	23.9	23.9	62.0
	Poor	1	.5	.5	62.4
	Very good	80	37.6	37.6	100.0
	Total	213	100.0	100.0	

Challenges for accessing digital resources from icddr,b library/ desktop/workstation

Table 9 below, provides the details of the mean value and standard deviation of constraints for accessing digital resources measured by 5 point Likert scale. 'Slow connection speed' has the highest mean value of 3.66 and the standard deviation belongs to 1.098 comprising rank one followed by 'Slow information download' and 'Low bandwidth' with mean value of 3.52 and 3.38 and their standard deviation is 1.135 and 1.1629 belong to rank second and third respectively.

Table 9: Vivid Statistics for accessing digital resources from icddr,b library

Vivid Statistics

Sl. No.	Constraints of accessing digital resources	N	Minimum	Maximum	Sum	Mean	Std. Deviation
1.	Slow connection speed	213	1	5	780	3.66	1.098
2.	Slow information download	213	1	5	749	3.52	1.135
3.	Low bandwidth	213	1	5	721	3.38	1.162
4.	Inadequate online databases	213	1	5	709	3.33	1.192
5.	Login problems	213	1	5	702	3.30	1.158
6.	Old computers	213	1	5	695	3.26	1.316
7.	Lack of sufficient computer nodes	213	1	5	694	3.26	1.096
8.	Lack of library training programs	213	1	5	687	3.23	1.254
9.	Inadequate searching skills	213	1	5	677	3.18	1.257
10.	Not familiar with online databases	213	1	5	634	2.98	1.301
11.	Valid N (listwise)	213					

Discussions

This study highlighted the present scenario of web-based library resources and services of the Library. The researchers of icddr,b demonstrated very positive attitudes towards e-resources for the availability for the variety of web-resources through their PCs/Laptops connected to the icddr,b domain. A majority of the researchers believed that e-resources are good for conducting research. It was also found that users with different purposes differed significantly in their access and use of e-resources.

A majority of the respondents are familiar about the location of the library. Most of the respondents 99 (46.5%) stated "Excellent" in terms of their first impression of the Library. Most of the researchers access e-resources through the library Intranet site in icddr,b domain. The majority 55.9%, of the respondents visited the library for 'Research Activities'. Most of the researchers are greatly enjoying web-based library services for scaling up their research activities and in this regard icddr,b Library Intranet site adds more values for accessing e-resources. Most of the respondents evaluated web-based library services as

'Very good'. 'PubMed' and 'Hinari' are the most valuable and paramount databases for icddr,b research communities. icddr,b library should give more attention for subscribing to more web-based resources as most of the respondents are well satisfied with the existing web-resources.

Challenges

There are several challenges in getting access to digital resources from icddr,b library/desktop/workstation/laptop. The major challenges of the icddr,b Library are mentioned below:

Bandwidth: The greatest challenge is related to the low bandwidth of network connections. As a result, users experience a slow downloading of articles, poor Wifi connections and weak network.

Old PCs: The old computers in Cyber Corner of Library are also problematic and challenges faced.

Staff members' behavior: Behavior and communication patterns of library staff could be more proactive towards researchers and users to achieve 'Excellent' during the evaluation of library staff by users.

Adequate online resources: More adequate e-resources should be made available in the Library. It also requires more budget to be made available from the operational cost of research programmes at icddr,b and programme-base e-journals or discipline-wise e-journals collection should be enhanced.

Detecting predatory journals: Identifying predatory or fake journals is another challenge for the researchers as icddr,b is a professional research organization and researchers need to publish their research output in peer-reviewed, reputed, international, high impact, and PubMed or Web of Science or Scopus indexed journals.

Library timings: Current operational time (from 08:30 am to 05:00 pm) of library is insufficient for researchers; hence, extending the library functional hours should be considered.

Information literacy: Specific training programmes focusing researchers' special needs should be organized.

Professional training: There is a lack of professional training on emerging issues of global library development and thus training should be introduced to ensure staffs are trained in current and emerging issues of librarianship.

Procurement system: Procurement of reading materials is another obstacle for the smooth operation of library services, so this system should be made more efficient and effective in icddr,b for the greater interest of researchers.

Separate entry system: In the context of Bangladesh, separate entry system for icddr,b external library users should be considered and introduced for those who would like to use icddr,b library facilities and services.

Besides, a Discussion Room is required to allow group discussion. Long time occupying library computers by project staff is another difficulty but it could be minimized adopting some computer-based mechanisms.

Conclusion

icddr,b Library trying its best to establish and introduce modern library technologies. The Library website offers tremendous opportunities to provide improved quality, productivity and more effective services to the users. The impact of ICT is visible in each and every activity of the library. icddr,b Library is no exception and this library is not far behind in the application of ICT for the library operations and services so as to provide better facilities and services to its user community. The present study examined the use of web-based information resources and services in icddr,b library. This paper discusses the development of web-based services and resources by the Library. There is a paradigm shift from print media to electronic media; from ownership of documents to access to information; intermediary to end-user model of services; and from location of specific libraries to digital/virtual/hybrid libraries. The electronic resources and services available in icddr,b Library play an important role in facilitating access to multi-faceted information to its users in an easy and expeditious manner.

Acknowledgement

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