Use and Usage Statistics of Electronic Resources at Central Library Tezpur University: A Case Study

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Application of technologies could create new possibilities to deal with the collections, organization and propagation of vast amount of information. In the library and information centre ICT is used as enabling technology for the acquisition, representation, storage, transmission, and use of resources in electronic form known as e-resources. Electronic resources are regarded as the mines of information that are explored through modern ICT devices, refined and redesigned and more often stored in the cyber space in the most concrete and compact form and can be accessed simultaneously from infinite points by a great number of audience. The libraries could not provide the adequate information to the academic communities including students and researchers at large due to the multi disciplinary research and proliferation of information which compelled the libraries to move from print to electronic sources. The electronic sources now available profusely on Internet, World Wide Web and Consortia including subject gateways facilitated the users to be with in the midst of the galaxy of information. The present study highlights the use, evaluation and management of e-resources in Central Library, Tezpur University where the user community take the opportunities to make the best use of e-resources provided by the said library.

Keywords: ICT, E-resource, Tezpur University, Usage Statistics

1.   Introduction

Information accumulated, organized, stored, retrieved and transmitted through electronic gadgets can be connoted with the term electronic information resources. E-resources has broadly been defined as, information accessed by a computer, may be useful as bibliographic guides to potential sources but, as of yet, they frequently appear as cited references in their own right. According to IFLA ISBD (ER) 1, 'An electronic resource consists of materials that are computer-controlled, including materials that required the use of a peripheral (e.g. a CD-ROM player) attached to a computer' and the items may or may not be used in the interactive mode. There are two types of e-resources: (i) Data (information in the form of numbers, letters, graphics, images, and sound, or a combination thereof) and (ii) Programs (instructions or routines for performing certain tasks including the processing of data and programs (e.g. online services, interactive multimedia) (Bavakenthy et al., 2003). E-resources are the electronic products that deliver a collection of data through text referring to full-text, e-journals, e-books, e-reports, image collection, and other multimedia products and a number of numerical, graphical forms and these products are commercially available through different outlets. Such products are market oriented which are sold using electronic domain such as Internet, e-mail, advertisements etc. Moreover, e-resources refer to

that kind of documents in digital formats which are made available to the library users through a computer based information retrieval system. E-resources is a very broad term that includes a variety of different publishing models, including online databases, sources from web pages, OPACs, e-journal articles, e-books, e-reports, e-databases, internet sources, print-on-demand (POD), electronic personal papers, e-mail messages, newsgroup postings, newsletters, government publications, electronic theses and dissertations, e-newspapers, CDs/DVDs, 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."

2.   Statement of the Problem

The library at present is maintaining two parallel collection of reading materials such as traditional and electronic resources to satisfy the varied needs of the user communities. Further, the Library and Information Centres require availability and accessibility to a variety of information resources and formats (such as digital full-text, sound, graphics, images, multimedia and hypertext). In view of the financial constraints almost all the university libraries including the Central Library, Tezpur University are unable to procure sufficient reading and research materials both in traditional and e-form for teaching and research purpose of the users including academicians. Moreover, the increasing volume of available publications has also created confusions for the library to acquire all the titles within the allocated limited budget which caused immense problems for the users in pursuing their teaching and research work. This has resulted the academic communities including students and researchers to move from print to electronic resources. Mention may be made that now-a-days, the e-resources are profusely available through Internet, World Wide Web and Consortia and subject gateways.

The problems associated with the library under study whether the e-resources could help the user communities to overcome the problems in spite of inadequate funding or stringent budget curtailments. Moreover whether, the users are used to the Information Technology, to find out their information need from a vast array of resources available in electronic form. Therefore, the present research topic attempts to find out the use of e-resources available in the Central Library, Tezpur University by the user community. This will facilitate the researcher to find out the relevance and length of the e-resources services provided by Central Library, Tezpur University as well as the Librarians to compare usage statistics from different vendors; derive useful metrics such as cost-per-use, make better-informed purchasing decisions and plan infrastructure more effectively.

3.   Scope of the Study

Tezpur University, Tezpur comprises 15 Departments covered under 5 schools which include. i) School of Management Sciences, ii) School of Energy, Environment and Natural Resources, iii) School of Humanities and Social Sciences, iv) School of Science and Technology and v) School of Engineering

including a student strength of more than 800 and 150 research scholars and 200 faculty members. There are altogether a total number of 1500 users comprising the students, research scholars, teaching faculties and non-teaching communities. The work under study has been dealt with extensively about the need, type and use of resources including evaluation used by the users in the library. However, the present study is limited only to Central Library, Tezpur University, Tezpur and no other central university libraries have been taken into account.

4. Objective of the Study

The objectives of the present study on the above research topic are to:
- ⮌ Survey the total number of e-resources available subject wise in the Central Library, Tezpur Uniersity.
- ⮌ Determine the awareness of e-resources among the users of Central Library, Tezpur University.
- ⮌ Find out the usage statistics of e-resources of the library under study.
- ⮌ Ascertain the problems of the users while accessing to e-resources.
- ⮌ Establish the rate of satisfaction about the use of e-resources among the users of the library.
- ⮌ Find out the subscription cost of e-resources.

5. Significance of the Study

The library happens to be the nucleus of information centers which supports the learning, teaching and research needs of the user communities by providing access to scholarly literature though various e-resources. Growth and change have always been predominant characteristics of the libraries. In the present days, adoptions of information technology have compelled the library to be dependent upon digital materials which could be collected through Internet on a WWW platform. The significance of the study is that it happens to the first and pioneer libraries in Assam to provide e-resources services to its clienteles. Moreover, the work aims at evaluating the flexibility of this library in this fluid environment as well as their capabilities in developing a process to integrate the changes in to a standard library practice to meet the current and update demands of the users' communities.

6. Methodology

While conducting the research the following three methodologies such as (i) Questionnaire, (ii) Observation, and (iii) Interview were adopted to collect necessary data pertaining to the topic.

While a structured questionnaire was designed for all types of users of Central Library, Tezpur University to assess the needs of the users of e-resources another structured questionnaire was designed for the librarian to find out the infrastructures developed in the library for disseminating e-resources services to

the users. Observation method was employed to make a survey of on-site real situation of the Central Library, Tezpur University followed by Interview method to know the real life situation prevailing in the library under survey.

7. Data Analysis and Findings

E-resources are becoming important information resource in today's electronic environment, as they are more up-to-date, and can be accessed anywhere, crossing all geographical boundaries. Through their various search techniques, electronic resources provide extensive links to explore additional resources or related content. Such resources add value while conducting R & D activities. There has been a rapid urge of the user community to get more and more information online. The development of ICT devices, the rapid rise of electronic databases, and modern e-book technologies have altogether changed the entire scenario of informatics. The user attitude to information is gradually shifting from printed documents to electronic resources and thus, it has become an important area of research for the information professionals in India.

Data Analysis and findings are essential for a scientific study and for that the scholar has taken relevant data obtained through the filled-in questionnaire for making analysis and drew the following inferences. Analysis refers to the computation of certain measures along with searching for patterns of relationship that exist among data groups. The analysis of data in a general way involves a number of closely related operations, which are performed with the purpose of summarizing the collected data and organizing these in such a manner that they answer the research questions. Analysis is the product of insight into the total situation, paying upon the assembled facts and giving them a general significance. Its validity depends more upon common sense, experience, background knowledge, and intelligent honesty of the interpreter than upon conformity to any set rules that might be formulated.

7.1 Analysis by Designation

Analysis of responses by designation of the library users' under study has been discussed in Table-1. Altogether 410 questionnaires were distributed to the users in Central Library of Tezpur University, which include 60 Teachers, 100 Research Scholars and 250 Students of different academic departments. Out of 410, a total number of 293 filled-in questionnaires were received which constitute (71.46%). While analyzing the table it was revealed that, the users belonging to the category of students have responded maximum which constitute (72.80%) followed by the responded teachers and research scholars which constitute (70.00%) and (69.00%) respectively. This shows that, students give much emphasis with regard to use of information Central Library, Tezpur University.

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Table: Analysis by Designation

Sl. No.	Designation	Questionnaire Distributed	No. of response	% of response
1.	Teachers	60	42	(70.00%)
2.	Research Scholar	100	69	(69.00%)
3.	Students	250	182	(72.80%)
	Total	**410**	**293**	**(71.46%)**

7.2   Analysis by Sources Used for Getting Information

Table : Analysis by Preference of Source of Information

Sl. No.	Source of Information	Category			Total
		Student	Teacher	Research Scholar	
1	Print Material	110 (60.44%)	28 (66.67%)	36 (52.17%	174 (59.39%)
2	Online Resources	83 (45.60%)	32 (76.19%)	50 (72.46%)	165 (56.31%)
3	Web Resources	63 (34.62%)	21 (50.00%)	33 (47.83%)	117 (39.93%)
4	CD-ROM	13 (07.14%)	03 (07.14%)	05 (07.25%)	21 (07.17%)
5	Audio-Visual Tapes	11 (06.04%)	00 (00.00%)	04 (05.80%	15 (05.12%)

The user visits the library to fulfill the information needs of them by consulting the documents available in the library. The users of the library were asked to indicate the types of resources which they prefer to use. Different types of information resources were listed in the questionnaire. Table-23 reveals the use of different sources and their preferences by the users of the Central Library. The table reveals that While 174 (59.39%) use print material, 165 (56.31%) and 117 (39.93%) users of Central library are using the online and web resources of the library which means e-resources are second most commonly used resource of the library. In this information age with the availability of more and more information accessible by the users through the electronic environment, most of the users prefer to use the e-resources due to its flexible and convenient access. But due to different problems the users of Central Library, Tezpur University prefers to use print materials. Moreover 25 (07.17%) uses CD-ROM and 15 (05.12%) uses Audio-Visual Tapes.
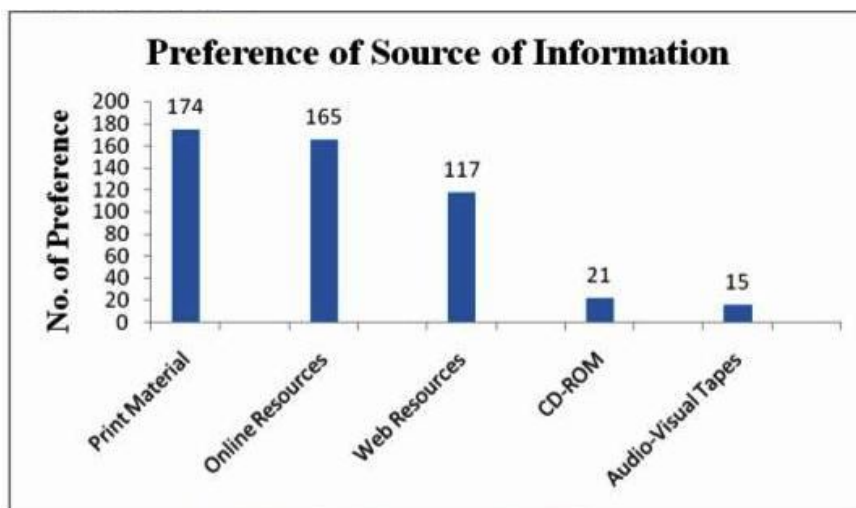
Graph : Analysis by Preference of Source of Information

7.3   Use of e-resources

Electronic Resources are becoming very important these days as they are more up-to-date, and can be accessed anywhere across all geographical boundaries. e-resources add value while conducting R&D activities. Electronic resources are making a significant growth as part of library collection which adds potential value to the resources of the library. Though a huge finance is involved in building of e-resources, it adds positive value to the users. But without conducting a study, there is no way of knowing whether the users accept them or not, do they find the e-resources easy to use, reliable, and useful or are e-resources effectively in use. The use of e-resources of the university library has been depicted below in Table-.

Table : Use of e-resources

Sl. No.	Use of e-resources	Category			Total
		Student	Teacher	Research Scholar	
1	Yes	119 (65.38%)	40 (95.24%)	61 (88.41%)	220 (75.09%)
2	No	63 (34.62%)	02 (04.76%)	08 (11.59%)	73 (24.91%)
3	Total	182 (100%)	42 (100%)	69 (100%)	293 (100%)

While analyzing the above facet it could be revealed that, 220 numbers of users (75.09%) out of 293 samples opine in favor of use of e-resources while 73 (25%) submit their negative opinion. This is however a positive response of the use of e-resources in various forms for different academic purposes.

7.4   Purpose of Use of e-resources

Table or Graph shows the purpose of using the e-resources by the users of the library.

Table : Purpose of Use of e-resources

Sl. No.	Purpose	Category			Total
		Student	Teacher	Research Scholar	
1	To up date knowledge	107 (58.79%)	20 (47.62%)	32 (46.38%)	159 (54.27%)
2	Supporting academic research work	28 (15.38%)	36 (85.71%)	56 (81.16%)	120 (40.96%)
3	Preparing notes	85 (46.70%)	21 (50.00%)	06 (08.70%)	112 (38.23%)
4	Writing an article	23 (12.64%)	28 (66.67%)	24 (34.78%	75 (25.60%)
5	Preparing lectures	05 (02.75%)	16 (38.10%)	04 (05.80%)	25 (08.53%)
6	Writing book	06 (03.30%)	13 (30.95%)	02 (02.90%)	21 (07.17%)

The respondents were asked to indicate the purpose of use of e-resources which differ from one user to another. The major purposes of use of use of e-resources are listed in Table-28 which forms the quantitative study that gives an indication of the core purpose of e-resources used by the users of Central Library. It is revealed from Table-28 that a majority of 159 (54.27%) number of the respondents use the e-resources of the library to up date knowledge while other use to support academic research work that constitute 120 (40.96%), 112 (38.23%) to prepare notes, 75 (25.60%) to write an article and 21 (07.17%) to write books. The table also indicates that among the users community the purpose of use of e-resources vary from category to category. Among the users, 107 (58.79%) students use e-resources to up date knowledge which ranks the first followed by 36 (85.71%) number of teachers and 56 (81.16%) number of research scholars who use for supporting academic and research work respectively and ranks in the second and third position.

7.5   Type of e-resources Used by the Users

Table-29 placed below reveals about the e-resources that are frequently used by the users at Central Library, Tezpur University. In order to analyze the frequently used electronic resources available in the library, the e-resources have been classified into six categories as shown in the table.

Table: Type of e-resources Mostly Used by the Users

Sl. No.	e-resources	Category			Total
		Student	Teacher	Research Scholar	
1	E-journals	85 (46.70%)	05 (11.90%)	67 (97.10%)	157 (53.58%)
2	E-books	101 (55.49%)	07 (16.67%)	21 (30.43%)	129 (44.03%)
3	Bulletin Board	09 (04.95%)	32 (76.19%)	00 (0.00%)	41 (13.99%)
4	DVDs	15 (08.24%)	03 (07.14%)	02 (02.90%)	20 (06.83%)
5	CD-ROM	11 (06.04%)	03 (07.14%)	02 (02.90%)	16 (05.46%)
6	Floppy Diskettes	01 (00.55%)	07 (16.67%)	00 (00.00%)	08 (02.73%)
	Total	222	57	92	371

The data shows that most of the faculty members and research scholars use some kind of e-resources. The table further reveals that, 222 number of students, 57 number of teachers and 92 research scholars use multiple type of e-resources such as, e-book, e-journals etc. While making analysis it could be ascertained that, 85 (46.70%) of students, 67 (97.10%) research scholars and 05 (11.90%) faculty members use e-journals respectively and constitute first, second and third rank respectively. Moreover, it also could be observed that 101 (55.49%) students, 07 (16.67%) teachers and 21 (30.43%) research scholars use e-books. Thus use of e-book is highest among the students. 09 (04.95%) students and 32 (76.19%) faculty members are using the bulletin board. Very less number of respondents is using the DVDs, CD-ROMs and Floppy Diskettes that are available in the library.

7.6 Use of UGC- Infonet and INDEST

Table: Use of UGC- Infonet and INDEST

Sl. No.	Use of UGC-Infonet and INDEST	Category			Total
		Student	Teacher	Research Scholar	
1	Yes	31 (17.03%)	39 (92.86%)	31 (44.93)	101 (34.47%)
2	No	151 (82.97%)	03 (07.14%)	38 (55.07%)	192 (65.53%)

The scholar would like to ascertain from the respondents about the use of e-resources subscribed under UGC- Infonet and INDEST consortium and the same has been tabulated in Table-30 which shows that (34.47%) of the respondents takes the benefit of the consortium. Among the respondents the teachers constitute the highest percentage i.e, 39 (92.86%) who takes the optimum benefit of e-resources followed by 31 research scholars (44.93%) and 31 students (17.03%) and thus ranks in the first, second and third position respectively. It is surprising to note that, a good chunk of the respondents i.e., 192 (65.53%) in total who are not using the e-resources of the library either due to lack of awareness or may not feel the need of e-resources.

7.7   Analysis by Frequency of e-resources Use

Table : Analysis by Frequency of e-resources Use

Sl. No.	Frequency of e-resources Use	Category			Total
		Student	Teacher	Research Scholar	
1	Never	07 (03.85%)	01 (02.38%)	02 (02.90%)	10 (03.41%)
2	Monthly	42 (23.08%)	05 (11.90%)	06 (08.70%)	53 (18.09%)
3	Weekly	67 (36.81%)	11 (26.19%)	06 (08.70%)	84 (28.67%)
4	Daily	66 (36.26%)	25 (59.52%)	55 (79.71%)	146 (49.83%)
5	Total	182 (100%)	42 (100%)	69 (100%)	293 (100%)
6	Mean	02.1%	02.4%	02.7%	02.2%
7	Standard deviation	0.9%	0.8%	0.8%	0.9%

Table-30 reveals the frequency of using e-resources by the users of Central Library, Tezpur University. Almost all the respondents use the e-resources. Frequency of use varies from (02.38%) to (79.71%). 146 (49.83%) users are using the e-resources daily, 84 (28.67%) are using weekly and 53 (18.09%) users access e-resources monthly. A few number 10 (03.41%) users never find the need to access the e-resources. Among the daily users 66 (36.26%) are students who constitute at the apex followed by 55 (79.71%) research scholars and 25 (59.52%) teachers and thus stand at the first, second and third position respectively. This might be due to the fact that, the teachers might be pre engaged for other type of academic works.

7.8   Access to Internet

In recent years, Internet has emerged as the most powerful medium for storage and retrieval of information. With the unprecedented growth in the quantum of knowledge worldwide and easy accessibility, Internet has become an unavoidable necessity for every institution for higher learning and research. An Internet user has access to a wide variety of services, such as, electronic mail, file transfer, vast amount of e-resources, breaking news, shopping opportunities, and many more. The scholar asked the respondents to indicate the average time spent on the use of Internet services of the library under study and the data has been tabulated in Table along with the Graph.

Table : Duration of Internet Use

Sl. No.	Duration of Internet Use	Category			Total
		Student	Teacher	Research Scholar	
1	Never	02 (01.10%)	00 (00.00%)	00 (00.00%)	02 (00.68%)
2	1-4 years	97 (53.30%)	02 (04.76%)	21 (30.43%)	120 (40.96%)
3	5-7 years	50 (27.47%)	06 (14.29%)	21 (30.43%)	77 (26.28%)
4	More than 7 years	33 (18.13%)	34 (80.95%)	27 (39.13%)	94 (32.08%)
5	Total	182 (100%)	42 (100%)	69 (100%)	293 (100%)
6	Mean	01.6%	02.8%	02.1%	01.9%
7	Standard deviation	00.8%	00.5%	00.8%	00.9%

The analysis shows that all the respondents are quite use to Internet and they browse it for various purposes. It could be revealed from the above table that, out of a total of 293 respondents, 94 (32.08%) number of respondents are using internet for more than 7 years followed by 77 (26.28%) respondents who browse on internet for last 5-7 years and 120 (40.96%) number of respondents are using the Internet for the last 1-4 years. This reveals that, very less number of respondents are used to internet who have got an exposure to e-resources. The study further reveals that, a good number of respondents are slowly inclined to make internet as platform for obtaining e-resources.
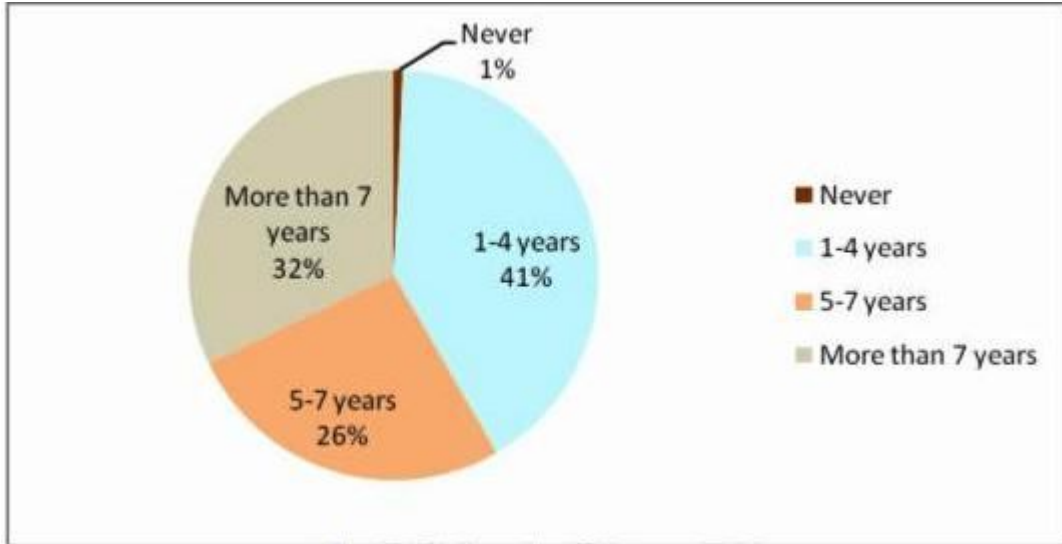
Graph: Duration of Internet Use

7.9   Use of OPAC/Web OPAC and Site of its Use

An Online Public Access Catalogue (OPAC) is a library catalogue having with a direct connectivity with the master databases of the library collections. It disseminates information about the availability of the documents in the library that can be accessed through a computer terminal for the benefit of library users. An OPAC provides the users online access to the library's catalogue allowing them to search and retrieve records which has got multiple access facilities of the document such as, ISBN, Author, Title, Subject, Keywords etc. OPAC is one of the important modules of integrated library management soft-ware. The university library under study uses LibSys software in the library for multiple purposes. The OPAC also extend the facilities to the users for online reservation, borrower status checking and so on. The scholar has put forth below the data relating to the use of OPAC/Web OPAC of the library under study in Table.

Table : Use of OPAC/Web OPAC

Sl. No.	Use of OPAC/Web OPAC	Category			Total
		Student	Teacher	Research Scholar	
1	Yes	105 (57.69%)	40 (95.24%)	47 (68.12%)	192 (65.53%)
2	No	77 (42.31%)	02 (04.76%)	22 (31.88%)	101 (34.47%)
	Total	182 (100%)	42 (100%)	69 (100%)	293 (100%)

It is revealed from the table that out of total 293 respondents, 192 (65.53%) are using the OPAC service of the library to find out information regarding the availability of the resources in the library premises while 101 respondents do not take the use of OPAC service due to many reasons such as, either they may not be knowing the use of such service or may not be conversant with the use of computer and or search technique. Analysis further reveals that, 105 (57.69%) number of users i.e, the students consti- tute the highest percentage followed by 47 (68.12%) number of research scholars and 40 (95.24%) teachers. This shows that students have the proficiency to use the computer as a medium of their learning process. With regards to Web OPAC service the users are more comfortable to find out academic information due to the Internet connectivity in the library and computer center etc. It is interesting to note the university provides the benefit to the students specially with Wi-Fi connectivity and campus network in their hostels which allow them to be more conversant with the technology. The faculties also are provided in their quarters with such facilities who take the best use for teaching and research pur- pose.

7.10   Rate of Satisfaction with Regard to the e-resources Services of the Library

The rate of satisfaction is another important factor to measure the standard of library services. In this study the scholar has measured the satisfaction rate according to the scale of excellent, good, moderate and no comment obtained through the questionnaire. The data has been placed in Table- 37 supple- mented with Graph-29 for clear visualization of the information.

Table : Rate of Satisfaction

Sl. No.	Rate of Satisfaction	Category			Total
		Student	Teacher	Research Scholar	
1	No comment	47 (25.82%)	01 (02.38%)	02 (02.90%)	50 (17.06%)
2	Moderate	40 (21.98%)	03 (07.14%)	15 (21.74%)	58 (19.80%)
3	Good	86 (47.25%)	33 (78.57%)	46 (66.67%)	165 (56.31%)
4	Excellent	09 (04.95%)	05 (11.90%)	06 (08.70%)	20 (06.83%)
5	Total	182 (100%)	42 (100%)	69 (100%)	293 (100%)
6	Mean	02.31%	03.00%	02.81%	02.53%
7	Standard deviation	00.91%	00.54%	00.62%	00.85%

Analysis of the Table-35 reveals that out of 293 respondents, a major chunk of the respondents i.e. 165 (56.31%) express their views as good while, 58 (19.80%) respondents express as moderate and 20 (06.83%) say as excellent. It is surprising to find out that 50 (17.06%) respondents in total did not place any comment. While deriving a mean of the same, it could be seen that the teachers percentage are more than that of research scholars and students which constitute 03%, 02.81% and 02.31% respectively. Further, the standard deviation obtain through the analysis reflects that the students per-centage (00.91%) are more than that of research scholar (00.62%) and teachers (00.54%).

7.11   Problems in Accessing e-resources

The study then sought to find out the main problems users had with accessing e-resources. Determina-tion of the problems helps the library and information centers to increase the efficiency and effective-ness of its services. To understand the problems facing by the users, the problem is categorized into five different categories as shown in following Table-36 followed by Graph-32 for clear understanding.

Table : Problems in Accessing e-resources

Sl. No.	Problem	Category			Total
		Student	Teacher	Research Scholar	
1	Accessing e-resources	112 (61.54%)	25 (59.52%)	42 (60.87%)	179 (61.09%)
2	Limited number of machines	24 (13.19%)	02 (04.76%)	02 (02.90%)	28 (09.56%)
3	Slow Internet speed	79 (43.41%)	20 (47.62%)	18 (26.09%)	117 (39.93%)
4	Insufficient resources	33 (18.13%)	17 (40.48%)	32 (46.38%)	82 (27.99%)
5	Information is not up to date	09 (04.95%)	05 (11.90%)	02 (02.90%)	16 (05.46%)
6	Do not understand the process	11 (06.04%)	00 (00.00%)	02 (02.90%)	13 (04.44%)

The scholar obtained the views of the users through the questionnaire through Yes and No while access-ing Internet. A total number of 179 (61.09%) express their views that they have got some problems which has been split over Table-36 under five broad categories such as limited number of machines, slow Internet speed, insufficient resources, information is not up to date and do not understand the process. Analysis reveals that, 117 (39.93%) respondents complain about the slow Internet speed while, 82 (27.99%) respondents feel as insufficient resources, 28 (09.56%) express about the limited avail-ability of computers and 16 (05.46%) feel that the information is not up to date including 13 (04.44%)

respondents observe that they do not understand the process. This shows that the users need to be more technical oriented for using Internet and other e-resources developed by the library. Time and again the users need to be trained with technical innovations so that they will prefer to use e-resources. The university library in turn requires to come up with good bandwidth for speedy access of information by the users on Internet.

9.   Subscription Cost of e-resources

In bundle subscriptions (big deals), publishers offered the institution electronic access to many or all of their journals across a wide range of disciplines for a price that, while large, still was less than the cost of subscribing to these journals individually. In the end, users gain access to a more comprehensive collection. A publisher's representative stated that e-journals are still less expensive than print journals because publishers offer a ten percent discount when subscribers select e-only access. With regard to economic gains, the representative pointed to cost-savings that would otherwise go to binding and storing print journals, as well as the savings in shelving capacity (Robertson, 2003). The INFLIBNET Centre spends huge amount for the subscription of e-resources. In 2008, Rs. 32,213,354 was spent for the subscription of number of e-journals to 10 (Ten) universities located in the North Eastern region.

➲   **Improved Service :** There is no doubt that e-journals opened up many exciting service opportunities for Central Library, Tezpur University. E-journals have enabled it to provide for access to many journals for its faculty, research scholar and students to support their academic and research work. ScienceDirect usage statistics, for example, indicate that the university has used 72, 52, 856 and 61 titles over the 12 months in 2005, 2006, 2007 and 2008 respectively. This number is nearly nine times the number of print journal subscriptions the university had with Elsevier. This represents a huge growth in the collection of the university and shows tremendous savings in terms of document delivery and additional subscriptions. E-journal titles greatly exceed the number of titles the library previously subscribed to in print. The great majority of ScienceDirect titles that were available to the university in 2004 did not have corresponding current print subscriptions. Access to these of e-journals supports the faculty/student/research scholars in a effective and efficient manner. It contains almost any title needed to maintain accreditation standards.

➲   **Enhanced Access :** E-journals have helped the Central Library, Tezpur University to improve its services to the users. Today most of the users of Central Library prefer to use the e-resources of the library due to its convenient access facility of 24-hour accessibility, remote and convenient access anytime and anywhere.

➲   **Increased usage :** The increased value of Central Library's e-journal collection is also evident in their use (Graph 4). E-journals are used more frequently than print journals. It is certainly true that the

usage statistics provided by publishers such as Elsevier indicate extensive performance. However, the high overall volume use conceals varied levels of use – a small number of titles have experienced the heaviest use while there are a large number of titles with few, or zero, accesses. Journal usage indicates that not every title has been used, and some titles were used infrequently by all programs as a whole. Altogether, a small number of journals formed the majority of total use. Interestingly, titles not sub-scribed to in print got more use than those subscribed to originally. A look at titles revealed that different disciplines showed a great deal of variation in their total use of e-journals. For example, users in the sciences seem to have used the collection more than the users in the social sciences.

Table : Number of Full text Article Request

Publisher	2005	2006	2007	2008
Elsevier	3146	372	20463	4812
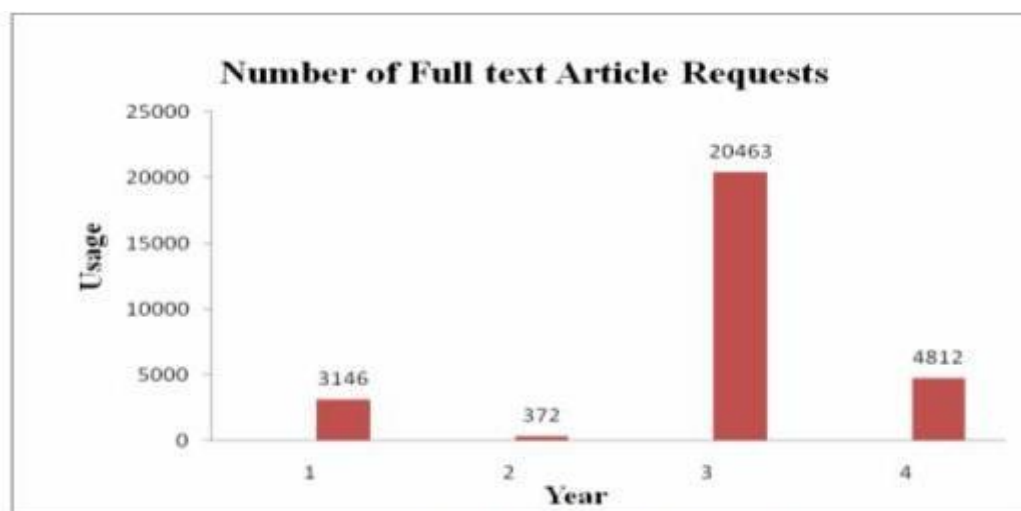
Graph : Number of Full text Article Request

10.   Measurement of Usage Statistics

Licensed electronic journals involved huge subscription cost. INFLIBNET has been spending crores of Rupees for subscription of e-resources. Licensee, and publishers, need to understand how much these e-resources are used and when. There are questions about how the content itself is used. How much is printed out, e-mailed, or downloaded. Since the consortia subscription of UGC-Infonet digital Library Consortium includes large number of journals published by single publishers and gives the user unlimited access to all articles, the primary unit of statistics will be collated by journal title. In this model, titles that are highly used will have a lower cost per-use and be perceived as a better value. Summaries of data

usage by journal title can help librarians decide what titles to add, change, or delete and can assist publishers in determining the health of the journal. With a full-text journal database, the conversation centers on three measures: hits (equated to searches), sessions (equated to users), and documents used (equated to downloads). The number of hits will vary, depending on network access and telecommuni-cation factors. Likewise, the number of sessions will vary because of time-outs and other network protocols. These measurements can be summarized by time periods of hour, day, week, month, and year. The formation of Project Counting Online Usage of Networked Electronic Resources (COUNTER) pro-vides the tool needed to measure e-usage accurately.

10.1   Usage Statistics for Full Text Access

Licensed electronic journals involved huge subscription cost. INFLIBNET has been spending crores of rupees for subscription of e-resources. Licensee and publishers need to understand the amount of use of these e-resources is used including the time. Since the consortia subscription of UGC-Infonet digital Library Consortium includes large number of journals published by single publishers and gives the user unlimited right of entry to all articles, the primary unit of statistics will be collated by journal title. In this model, titles that are highly used will have a lower cost per-use and be perceived as a better value. Summaries of data usage by journal title can help librarians decide what titles to add, change, or delete and can assist publishers in determining the health of the journal. With a full-text journal database, the conversation centers on three measures: hits (equated to searches), sessions (equated to users), and documents used (equated to downloads). However, measuring hits or sessions can yield misleading information. The number of hits will vary, depending on network access and telecommunication factors. Likewise, the number of sessions will vary because of time-outs and other network protocols. These measurements can be summarized by time periods of hour, day, week, month, and year. The systems staff analyzes data from server logs to determine the ability of the server to meet the load during periods of peak demand.

In networked information environment, the ability to monitor the traffic and usage is not easy task. Most of electronic resources available through consortia are served from server maintained and controlled by publishers, aggregators and vendors. As controlling authority of data rests on the publishers, the users do not find in any way to know the reality and simply belief in them. It has practically difficult and complex to obtain reliable data from publishers. This has created problems in obtaining accurate use statistics for e-Journals. With new standards like COUNTER which stands for Counting Online Usage of Networked Electronic Resources has made libraries to serve librarians, publishers and intermediaries by facilitating the recording and exchange of online usage statistics. (Prem Chand; 2006; 351-356). The following table clearly depicts the monthly usage statistics full text access by Tezpur University in the year 2007. Altogether, 20,268 articles could be accessed by the users of the library under study in the year under report.
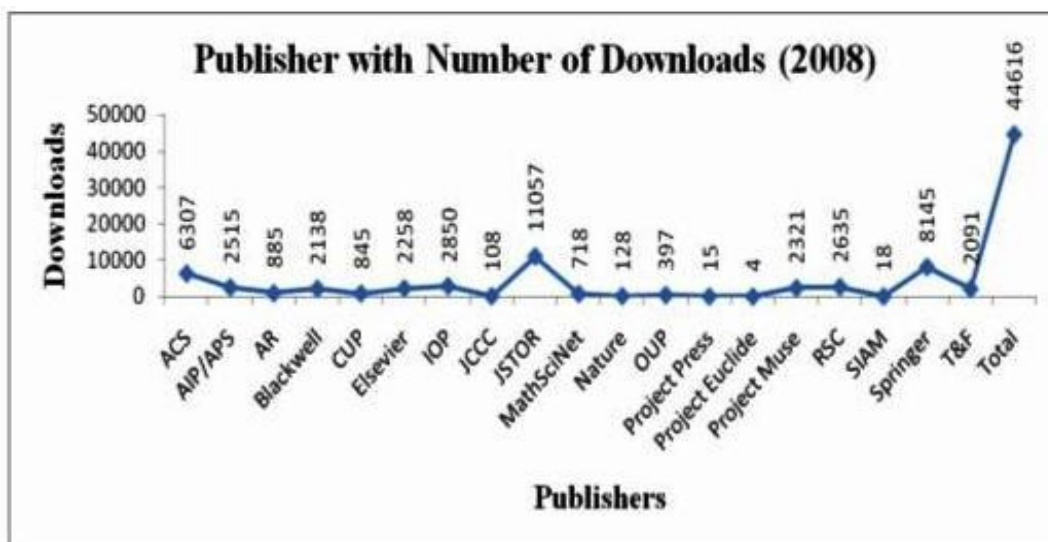
Graph : Usage Statistics-full text access by Tezpur University during the year 2007(Monthly).
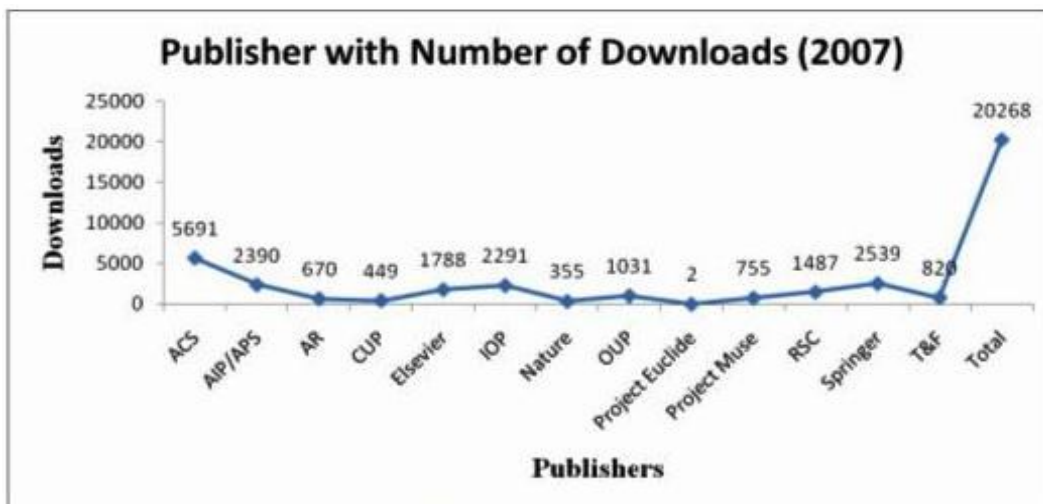
Graph: Usage Statistics for the year 2007.

From the above table it is found that the highest usage is from American Chemical Society (ACS) followed by Springer and American Institute of Physics/American Physical Society (AIP/APS) in second and third respectively.

Graph : Usage Statistics-full text access by Tezpur University during the year 2008(Monthly).

Graph: Usage Statistics for the year 2008.

Access Report of Successful Full-Text Article of Elsevier Requests by Month (Year 2005, 2006, 2007 and 2008)

Table: Access Report of Successful Full-Text Article of Elsevier

| Month	2005	2006	2007	2008
January	53	317	0	617
February	557	55	0	986
March	476	0	10529	736
April	210	0	7726	590
May	102	0	40	781
June	87	0	13	423
July	48	0	187	333
August	222	0	341	346
September	745	0	844	0
October	71	0	367	0
November	405	0	315	0
December	170	0	101	0
Total	**3146**	**372**	**20463**	**4812**
HTML	**731**	**21**	**1672**	**1264**
PDF	**2415**	**351**	**18791**	**3548**
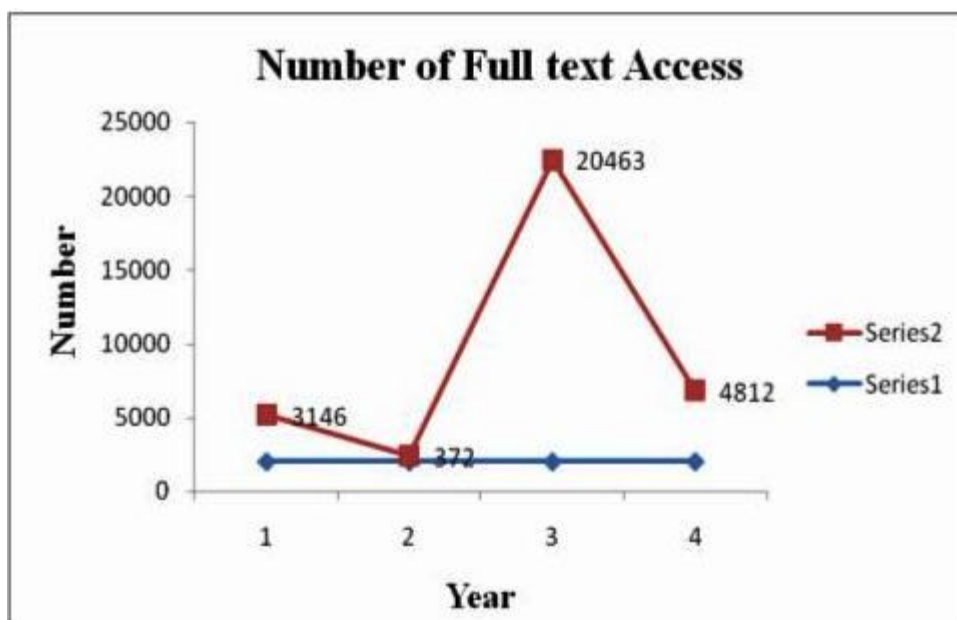
Graph : Number of Full text Access
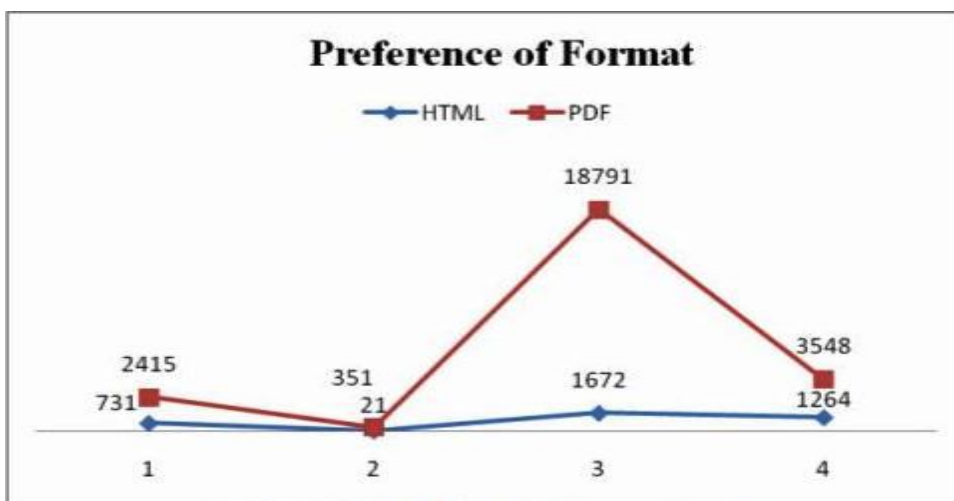
Graph: Prefernce of Format to Access e-journals

Access Report of Successful Full-Text Article of SciFinder Requests by Month
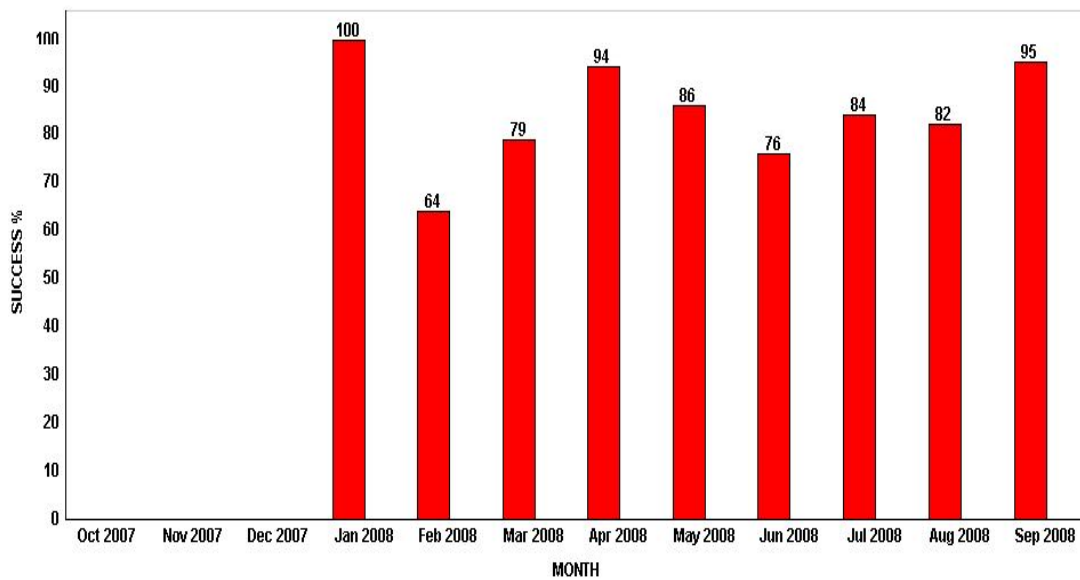
Graph: Access Report of Successful Full-Text Article

Table: Growth of Number of Usage per Year.

SL.No.	Year	Total Number of Use
1.	2007	20268
2.	2008	44616

11. Suggestions from the users

The scholar obtained suggestions for improvement of services with regard to e-resources of the library under study from the respondents which have been tabulated in Table- 37 along with supported Graph-31. The suggestions obtained from the respondents have been grouped under 9 broad headings as shown in the table.

The total number of 30 (10.24%) respondents viewed for increase of e-journals followed by 17 (05.80%) users who emphasize for the increase of the bandwidth, 14 (04.78%) number of users revealed for the information that are available with regard to new e-resources in the library. 10 (03.41%) of respondents opined for imparting training to the use of e-resources while 07 (02.39%) of respondents need for the content development of e-resources for effective use. The other respondents, however, have emphasized for the availability of e-format, providing selected e-resources as per their requirement including an opinion for opening of the library round the clock. The suggestions are very encouraging which the library requires to fulfill. It reveals that the users are more concerned for use of e-resources and the suggestion required to be met by the library in view of profuse use of e-resources for greater academic interest.
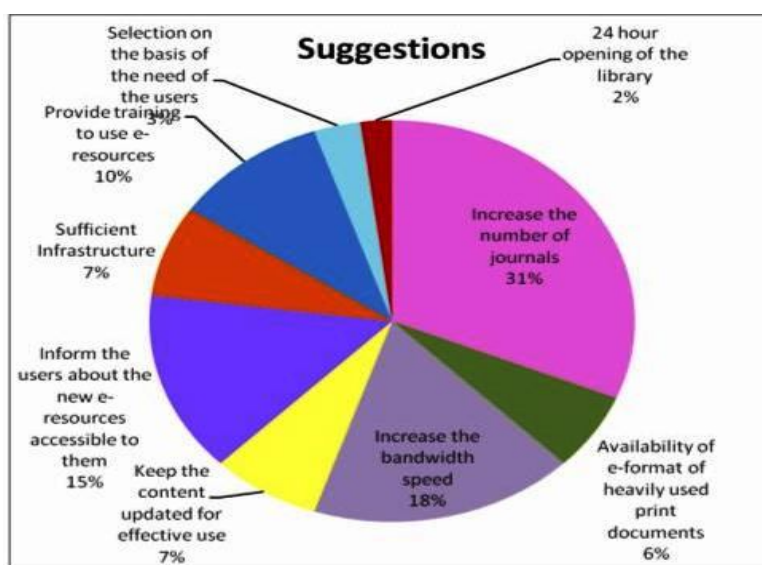
Graph: Suggestion by the users

12.   Relationship among frequency of library visit, duration of internet use, Frequency of e-resources use and Satisfaction in using e-resources

Table: Relationship of frequencies of internet use, e-resources and satisfaction

Variable	Frequency of Library Visit	Duration of Internet Use	Frequency of E-resources Use	Satisfaction in Using e-resources
Frequency of Library Visit	01	-0.04	0.03	0.09
Duration of Internet Use	-0.04	01	0.12*	0.16**
Frequency of E-resources use	0.03	0.12*	01	0.20**
Rate of satisfaction in using e-resources	0.09	0.16**	0.20**	01

A cross tabulations was performed to determine the relationship between the frequency of library visit, duration of Internet use, frequency of e-resources use and other factors, including rate of satisfaction in using the e-resources. The relationship among the frequency of library visit, Internet use, use of e-resources has been reflected in Table- 38 under 4 variables such as frequency of library visit, duration of Internet use, frequency of e-resources use and rate of satisfaction in using e-resources. The analysis revealed that the frequency of the visit is 01 while the duration of Internet use is -0.04 and the frequency of e-resources use is 0.03 thereby, deriving a satisfaction among the respondents as a whole in using of e-resources which comes to 0.09. Under the variable duration of Internet use the frequency of library visit comes to -0.04 and the frequency of e-resources use is 0.12 which constitute 0.16 satisfaction level for using of e-resources. And it has significant at 1% level. The variable frequency of e-resources use was examined by the scholar where the frequency of library visit comes to 0.03, Internet use at 0.12 thereby giving a satisfaction level to the users 0.20 where significant is at 1% level. Rate of satisfaction in using e-resources as a variable was examined by the scholar where it could be found that the frequency of library visit is 0.09 while duration of Internet use is 0.16 and frequency of e-resources use come to 0.20 and thereby giving a satisfaction level of only 01. Mention may be made that while analyzing the two variables i.e. duration of Internet use and frequency of e-resources use, it could be noted that the e-resources use is 0.12 while the Internet use in the later variable is 0.12 where the significant level is at 5%.

13.   Conclusion

Information and knowledge are the products of society which flows through various channels of information resources. These information resources help to improve the quality education and research work. The advances in ICTs have brought phenomenal changes in libraries with regard to its infrastructures,

management of information resources, library functions, services, and competencies of the staffs, development of skills along with users' requirements. In this changing environment there is a shift from print to e-resources which are easy to use, flexible and available without geographical boundary. The enhanced features of online access provided through web technologies such as hyperlinks to related texts and links to multimedia also provide value addition to these resources. Development of communication systems and digital technology has made the e-resources available in abundance in World Wide Web. E-resources are becoming very popular and pervasive these days as it provides the freedom to access the content at the desktop of the user at ease. The summary and findings of the study has been placed below.

- It could be revealed that the use of e-resources among the students of the library under study is primarily to update knowledge.
- The teachers and research scholars however use the e-resources for academic research work, preparation of notes, writing of articles and writing of books.
- The type of e-resources available in the library in the form of e-book, e-journal, etc. all the category of users prefers to use e-resources.
- The teachers of the university under study use UGC-Infonet and INDEST Consortium to find the latest information in their own subject and constitute the highest percentage for using the e-journals. It is also surprising to note that a good number of respondents are not used to e-resources of the library due to lack of their awareness.
- The teachers and the research scholars however prefer to use on campus podium for e-resources due to Wi-Fi connectivity.

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