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UGC-INFONET Usage in Manipur University : A Statistical Comparison of Downloads from Different Publishers

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ABSTRACT

The study attempts to find out the usage of e-resources of various publishers available under UGC-INFONET by the academic community of Manipur University during 2007 and 2008. The study reveals that while there is an increase in the usage of the resources of most of the publishers in spite of certain problems of accessibility, resources of some of the publishers were underutilised. Though the study does not investigate the usage of individual journal covered by each publisher, yet an average of downloads of each publisher based upon the coverage has been worked out and presented. The study suggests that there is a need to find out usage of individual product of the publisher in view of the findings that the larger the coverage least is the use.

Keywords: UGC-INFONET, Wilcoxon rank test, e-journal, consortia, e-resources, resource sharing, INFLIBNET

1. INTRODUCTION

Information explosion, heavy demands of clientele, development of powerful microcomputers, shrinking library budget, remote location of libraries and rapid changes in telecommunication systems are forcing the modern libraries to establish and participate in information networks. It is neither economically nor physically possible for any library to acquire all the required documents especially highly priced journals needed for its users. To cope up with financial constraints, and to acquire/subscribe large number of literature published and available in various forms, resource sharing by way of coordination and cooperation seems to be the only way out to control this problem [1]. Majority of the libraries today have become part of one or the other information network to augment their resources, which enable them to participate with other libraries under the network to obtain not only bibliographic details of the holdings but can also access full texts, indexes and abstracts of the required articles using e-mail, fax, Intranet and Internet attached to the system as per needs and requirements. Electronic information network is the basic necessity for resource sharing which provides effective communication and speedy services to remote users [2]. The scenario of resource sharing during the last two decades has drastically changed due to more and more libraries automating their catalogues, acquiring resources in electronic format and getting connected to one or the other network. Networking and resource sharing is the only method or option to overcome the limitations and inadequacy of resources and build up large databanks irrespective of ownership by way of cooperation and coordination of resources among participating libraries. This has resulted in easy access of the resources from the remote nodes adding new dimension to the nature of library services. In the present scenario, any user or individual is able to search the library material electronically and is able to download/ print or copy the desired document. Such library cooperation, joining and participation in the network play an important role in the functioning of a remotely located library like Manipur University library, where geographical location is a great hurdle in accessing and using information from other locations. Thus, joining and participation in networks/ consortia of remotely situated libraries become increasingly important.

India has now many networks for sharing of resources in various disciplines. More and more such

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networks are likely to be evolved for better utility of information and knowledge. In the present knowledge society, information management and dissemination is the priority area. Establishment of INFLIBNET has been undoubtedly a landmark achievement and its contribution, especially to financially deficient libraries, has been most significant. In spite of various problems associated with accessing of information, UGC-INFONET has developed good e-resource open to the universities and colleges of India. So far as usability of the resources is concerned, it has a upward trend and dependence of academic community on this network is increasing despite certain local problems of connectivity in certain universities.

2. PREVIOUS STUDIES

Large number of studies have been conducted on use of e-resources including e-journals. Manjunatha and Shivalingaiah in a study on electronic resource sharing in academic libraries observed that the technical advancements provided a platform for digital resource sharing and opportunities for librarians to become more technical and professional. They also presented the requirements and strategies for effective resource sharing in academic libraries [3].

Another study conducted by Vishala and Bhandi on availability of library and information science electronic journals through UGC-INFONET project aims to create awareness among the library and information professionals including research scholars, faculty and postgraduate students of library and information science regarding the availability of the scholarly journals in the field of library and information science [4]. A survey of 200 users of Mysore University on use of e-journals and databases subscribed by UGC-INFONET consortium presented the use of Internet as an alternative to UGC-INFONET consortium resources [5]. In a case study, Chand and Nishy examined the changing face of libraries particularly with regard to the journal subscription from print to electronic form through formation of consortia and necessity for widening the journal subscription [6].

A study on trends in open access publishing in India observed that among the top 25 open access publishing countries, India ranks 12th for the overall number of journals [7]. Sathyanarayana discussed the J-Gate and open access databases and their salient features [8]. Another case study at Central Glass and Ceramic Research Institute on access to electronic journals through CSIR consortia highlighted the advantages of consortia [9].

A case study on use of electronic information resources at Thapar University showed the increasing trend in the use of e-journals [10]. A survey conducted by Joteen Singh, Madhuri Devi and Raychaudhury on the use of the electronic information focusing on the Internet services by the users of Manipur University highlighted the difficulties and satisfaction level of users about Internet-based e-resource services [11].

3. UGC INFONET: E-JOURNAL CONSORTIUM

The UGC-INFONET Digital Library Consortium was formally launched in December 2003 by Dr A.P.J. Abdul Kalam, the then Hon'ble President of India, soon after providing the Internet connectivity to the universities in the year 2003 under the UGC-INFONET programme. The Consortium proved to be a recipe to university libraries, which have been discontinuing subscription of scholarly journals because of "serials crisis" mainly caused by increase in subscription rates of serials and shrinking library budget. The term "serials crisis" refers to exponential and continuing increase in subscription cost of scholarly journals and institutional trend to decrease the library budget. It is estimated that the rise in cost of journals happened much faster than the rate of inflation.

The UGC Consortium provides current as well as archival access to more than 5000 core and peer-reviewed journals and nine bibliographic databases from about 20 publishers and aggregators in different disciplines. The programme has been implemented in phased manner. In the first phase that began in 2004, access to e-resources was provided to 50 universities including Manipur University, which had Internet connectivity right from the launching of INFLIBNET under the UGC-INFONET connectivity programme. In the second phase, 50 more universities were added to the programme in the year 2005. So far 153 Universities out of 171 that came under the purview of UGC have been provided access to UGC-INFONETbut at different levels; some have full access to all the resources whereas some have been provided with limited access to limited number of databases. These e-resources covers almost all subject disciplines including humanities, social sciences, physical sciences, chemical sciences, life sciences, computer sciences, mathematics and statistics, etc. The programme is being fully funded by the UGC and executed by the INFLIBNET Centre, Ahmedabad, for the benefit of academic community of Indian universities.

4. MANIPUR UNIVERSITY: AN OVERVIEW

Manipur University now has 34 government colleges, eight government-aided colleges, 18 permanently affiliated private colleges, seven private affiliated colleges and six permitted private colleges. In addition, the university itself has 25 postgraduate departments. The university library is located at the heart of the university as the nerve centre of academic and research activities having about 2,264 registered users comprising of 1,278 PG Students, 500 Research Scholars, 136 Teachers, 350 Non-teaching Staff and some other unregistered users from the state who are also users of the university library.

The library has a collection of over 1, 50,000 books, and 280 printed journals. Library is well supported by 30 Internet node facilities and reprography services. Collection of the library can also be browsed from different departments through campus network. The campus network covers all the departments including library, administration, sports, audio-visual research centre, and four different hostels. The number of computers in the network is over 400 and is supported by 2 Mbps leased line Internet connection. UGC-INFONET is accessible under whole campus area network for wider usability of resources.

4.1 Training Programme

The Manipur University library is actively participating in various training programmes conducted by INFLIBNET Centre, Ahmedabad. Besides, the library has conducted varieties of training prgrammes like orientation, awareness and seminar with the help of INFLIBNET, Ahmedabad, to promote the use of library resources. A week long Regional Training Programme, financed by INFLIBNET, was conducted from 23-28 July 2002 on library automation for college librarians and other library professionals. The library also organised many awareness programme on UGC-INFONET in the year 2004, 2006 and 2008 with the financial support from INFLIBNET; INFLIBNET has been giving liberal financial support to conduct various training programmes particularly to promote the use of its e-resources.

5. OBJECTIVES OF THE STUDY

UGC-INFONET has grown into a large network of academic libraries over the years and has large number of resources to share, particularly e-journals, among academic libraries of India. Academic libraries who are using UGC-INFONET have discontinued individual subscription to journals and mainly depend upon the services being offered under the said network. However, many libraries with good library budget are subscribing their own print and e-journals according to their requirements. Availability of resources does not matter much as large collection having least use defeats the very purpose of collection building. Therefore, it is a common concern to know the usage of resources being subscribed under the network and determine the cost effectiveness of the system. Usage is the key index to evaluate the services of the network.

The number of resources available under the network does not matter much, it is the extent of use of resources, which is important and matters. The bundle price of subscription of journals is to be evaluated on the statistics of downloads from individual title. If bundle price is being paid for 1000 journals of a particular publisher, and the usage is only of 100 core journals, it compels the professionals to rethink whether to go for bundle pricing policy or should subscribe only those journals which are being used at a certain minimum levels. This pre-supposes the study of usage of individual title based upon the login method and download.

The best methodology of usage of e-resources in Internet environment is login vide where actual use can be determined. It is much more authentic method than questionnaire-based data collection. Since usage and download from each title is not feasible due to lack of authentic methodology available, so present study is limited to achieve the following objectives:

(i) To determine number of downloads from each publisher from UGC-INFONET.

(ii) To make comparison of downloads among various publishers to find out the popularity of the publishers' products and their relationship with the subjects.

(iii) To find out the awareness of usage of e-resources among faculty members and students discipline-wise.

(iv) To make the statistical presentation of comparison of download of subject databases and databases dealing with multi-disciplines.

6. METHODOLOGY

The usage/download of e-resources of 20 publishers was found out by way of logging-into Inflibnet website where year-wise download statistics was available. Thus, data pertaining to Manipur University was captured for the year 2007 and 2008 for the purpose of present study. In certain cases a data for some months were not available so had to be excluded for analysis. However, average download was found for each month. As the available data for most of the publishers do not pass the test for the normality assumption, a non-parametric test called the Wilcoxon rank test was used for the comparison [12]. Wilcoxon rank test is used to test the difference between mean numbers of download among different publishers during the given years for the purpose of comparison.

7. ACCESSIBILITY OF PUBLISHERS' DATABASES FROM MANIPUR UNIVERSITY

Manipur University can access the large number of e-journals through UGC-INFONET as shown in the Table 1.

8. DATA ANALYSIS

Data of download from January to December for the year 2007 and 2008 for each publisher was collected and tabulated by determining the mean value. Wilcoxon rank test was conducted for each publisher to find out whether the increase in succeeding year was significant or not in

Table 1. List of publishers accessible from the Manipur University

Publisher	No. of titles	Present subscription status
American Chemical Society	37	Continuing
American Institute of Physics	18	Continuing
American Physical Society	10	Continuing
Annual Reviews	33	Continuing
Blackwell Publishing	496	Continuing
Cambridge University Press	223	Continuing
Elsevier Science	34	Continuing
Emerald	29	Continuing
Institute of Physics	46	Continuing
JSTOR	1185	Continuing
Nature	1	Continuing
Oxford University Press	198	Continuing
Project Muse	297	Continuing
Project Euclid	36	Continuing
Portland Press	8	Continuing
Royal Society of Chemistry	29	Continuing
Scifinder Scholar	1	Continuing
SIAM	14	Continuing
Springer Link	1950	Continuing
Taylor and Francis	1076	Continuing

order to establish the trend of popularity of each publisher. Subject consideration was taken into account to know the usage of the respective subject(s).

9. RESULTS AND DISCUSSION

9.1 Chemistry and Allied Sciences

Monthly downloads in chemistry during 2007-08 from ACS (American Chemical Society) and RSC (Royal Society of Chemistry) have been shown in Tables 2 and 3. Data for November and December for 2008 was not available so had to be excluded.

In both the years, increase in download is quite evident even ignoring data for two months (for 2008) as shown in the Table 2 which comes to 1.56. Though download from RSC in comparison to ACS was much less yet it is important to note that increase was significant in RSC, i.e., 2.8 times, showing that resources became more popular.

The mean number of downloads during 2007 and 2008 for ASC and RSC are presented in Table 4.

The analysis shows that for both 2007 and 2008, the mean number of downloads for ACS was more than five times during 2007 and more than three times during 2008 as compared to RSC. So far as individual increase in download is concerned, it is in RSC where increase was noted almost three times showing that usage of RSC in the latter year increased substantially as shown in Table 4.

Table 2. Number of downloads from ACS in different months in the Manipur University

Year	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
2007	95	40	205	234	91	234	247	128	65	534	303	256	2432
2008	1075	457	260	127	199	230	346	182	429	511	–	–	3816

Source: Usage statistics data uploaded by INFLIBNET

Table 3. Number of downloadsfrom RSC in different months in the Manipur University

Year	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
2007	16	5	12	8	79	29	26	18	14	40	74	161	482
2008	46	163	41	76	231	182	133	179	65	94	69	77	1356

Source: Usage statistics data uploaded by INFLIBNET

Table 4. Mean number of downloads with respect to ACS and RSC

Year	ACS	RSC
2007	203	40
2008	382	113

The results of performing Wilcoxon rank test for testing the difference between the above means are presented in Table 5. As shown in the Table 5, the p-values are all significant at 5 per cent level and it can be statistically concluded that:

(i) There was a significant increase in the popularity of both ACS and RSC from 2007 to 2008.

(ii) ACS was significantly more popular than RSC during 2007 and 2008.

It also has to be borne in mind the coverage of titles by the publisher concerned while doing such comparison. The coverage of ACS and RSC is 37 and 29 titles, respectively. In view of this, use of ACS in Manipur University is much higher than RSC.

9.2 Physics and Allied Sciences

To determine downloads in the Physics, AIP (American Institute of Physics) and IOP (Institute of Physics) were considered. Tables 6 and 7 show the number of downloads form these publishers. The increase in downloads, both from AIP and IOP, is comparatively less as compared to ACP and RSC. Increase is not even two times in the later year both in AIP and IOP. The mean number of downloads are presented in Table 8. The average of downloads shows that the neither the use is significant nor the increase from 2007 to 2008. If coverage of titles is taken into account, which is 18 and 46 in *AIP* and *IOP,* respectively, the download was expected more in IOP. In view of the scope and coverage of IOP, the usage should have been at least two times if not more. The result of statistical analysis using Wilcoxon test is presented in Table 9. Table 9 shows that there is neither significant increase in download over the years or difference between the two in respect of usage in each year.

Table 8. Mean number of downloads with respect to AIP and IOP

Year	AIP	IOP
2007	80	88
2008	104	105

9.3 Library and Information Science

Department of Library and Information Science of Manipur University offer master degree and PhD programmes. There is only Emerald Database which is accessible under UGC-INFONET covering LIS journals. However, some texts are also available in other databases such like Taylor and Francis and JSTOR. Data of downloads from Emerald was done for 2007-2008 to find out the usage of journals in LIS (Table 10). Except for November and December 2008, data of downloads for all the months were available for analysis. Table 10 reveals that there is fluctuation in downloads. The mean number of downloads for the year 2007 and 2008 were 149 and 127, respectively. Wilcoxon rank test used to determine the p-value which comes to 0.674 showing that there is no significant difference between the mean numbers of downloads from Emerald during the years 2007 and 2008. Instead, there has been decline in download in 2008 by 1.4 times.

Table 5. Result of Wilcoxon test

Hypothesis tested	Statistic	p-Value	Significant at 5 %
$\bar{x}_{ACS}$ (2007) = $\bar{x}_{ACS}$ (2008)	-1.682	0.046	Yes
$\bar{x}_{RSC}$ (2007) = $\bar{x}_{RSC}$ (2008)	96	0.0006	Highly significant
$\bar{x}_{ACS}$ (2007) = $\bar{x}_{RSC}$ (2007)	3.851	0.0002	Highly significant
$\bar{x}_{ACS}$ (2008) = $\bar{x}_{RSC}$ (2008)	3.364	0.0004	Highly significant

$\bar{x}$ *Stands for the mean number of downloads*

Table 6. Number of download from AIP in different months of 2007-08 in Manipur University

Year	Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
2007	10	39	56	32	150	72	102	60	87	123	147	80	958
2008	192	170	88	108	57	42	69	186	21	52	186	77	1248

Source: Usage statistics data uploaded by INFLIBNET

Table 7. Number of download from IOP in different months of 2007-08 in Manipur University

Year	Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
2007	35	10	21	29	119	81	69	102	35	58	401	98	1058
2008	135	133	100	45	148	46	18	3	4	214	305	107	1258

Source: Usage statistics data uploaded by INFLIBNET

Table 9. Result of Wilcoxon test

Hypothesis tested	Statistics	p-Value	Significant at 5%
$\bar{x}_{AIP}$ (2007) = $\bar{x}_{AIP}$ (2008)	-0.895	0.201	Not significant
$\bar{x}_{IOP}$ (2007) = $\bar{x}_{IOP}$ (2008)	-0.721	0.235	Not significant
$\bar{x}_{AIP}$ (2007) = $\bar{x}_{IOP}$ (2007)	0.722	0.764	Not significant
$\bar{x}_{AIP}$ (2008) = $\bar{x}_{AIP}$ (2008)	0.375	0.646	Not significant

$\bar{x}$ *Stands for the mean number of downloads*

Table 10. Number of downloads from Emerald in different months of 2007-08 in Manipur University

Year	Jan	Feb	March	Apr	May	Jun	July	Aug	Sept	Oct	Nov	Dec	Total
2007	34	0	7	122	97	23	112	98	254	905	93	43	1788
2008	115	136	101	53	11	10	51	52	164	582	-	-	1275

Source: Usage statistics data uploaded by INFLIBNET

9.4 Publishers Covering Multiple Disciplines

The available data on usage statistics of UGC-INFONET in the Manipur University also includes publishers, which deal with multiple subjects/disciplines. In this study, an attempt has also been made to compare the usage statistics of publishers having multiple disciplines. To make the comparisons rational, pairs of publishers having more or less similar disciplines have been clubbed together. Some of the publishers, whose download is available for less than four months, have been excluded for analysis.

9.4.1 Springer Link

Springer Link covers 1950 journals of many disciplines. The usage statistics for 2007 and 2008 is shown in Table 11. The table shows that the number of downloaded articles from Springer Link has increased in 2008 compared to 2007. The mean number of downloads during the two years is tested for equality and the p-Value, and was found 0.0032, which is highly significant. Thus, from Springer Link, the mean number of downloads is significant with the increase of roughly two times in 2008 as compared to 2007. However, if the number of journals being covered by Springer Link is taken into account, download/ usage is quite low; less than one article on an average from each journal during 2007, which increased to about three articles from each journal in 2008.

9.4.2 Cambridge University Press and Oxford University Press

Download from the two publishers have been presented in Table. 12 and Table13. CUP as well as OUP is multi-disciplinary publishers and cover almost similar disciplines. Usage statistical data of OUP for the year 2008 was not available, so had to be excluded. The mean numbers of download from Springer Link, CUP, OUP, and JSTOR are given in Table 14, and the results of Wilcoxon test in Table 15.

Table 14 and 15 show that during the year 2007, the mean number of downloads from Springer Link is

Table 11. Number of downloads from Springer Link during 2007-08 in Manipur University

Year	Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
2007	76	129	57	240	447	229	562	178	453	416	231	415	3433
2008	382	561	572	744	593	457	515	256	407	632	447	642	6208

Source: Usage statistics data uploaded by INFLIBNET

Table 12. Number of downloads from Cambridge University Press during 2007-08 in Manipur University

Year	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
2007	15	11	18	30	36	35	42	52	0	17	26	41	323
2008	18	62	24	13	65	0	0	16	45	0	87	47	452

Source: Usage statistics data uploaded by INFLIBNET

Table 13. Number of downloads from Oxford University Press during 2007 in Manipur University

Year	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
2007	37	24	81	81	74	59	234	126	149	60	40	117	1082

Source: Usage statistics data uploaded by INFLIBNET

Table 14. Mean number of downloads for Springer, CUP, OUP, and JSTOR

Publisher	Year	Mean
Springer Link	2007	286
	2008	517
CUP	2007	27
	2008	31
OUP	2007	90
JSTOR	2007	1334

Table 15. Result of Wilcoxon test

Hypothesis tested	Statistic	p-Value	Significant at 5 %
$\bar{x}_{\text{Springer}}(2007) = \bar{x}_{\text{OUP}}(2007)$	2.974	0.0029	Significant
$\bar{x}_{\text{CUP}}(2007) = \bar{x}_{\text{CUP}}(2008)$	0	1.0	Not significant
$\bar{x}_{\text{Springer}}(2008) = \bar{x}_{\text{JSTOR}}(2008)$	102	0.0045	Significant
$\bar{x}_{\text{OUP}}(2007) = \bar{x}_{\text{CUP}}(2007)$	3.378	0.0007	Significant

$\bar{x}$ *Stands for the mean number of downloads*

significantly larger than that of OUP. From CUP, there is no significant increase in the mean number of downloads from 2007 to 2008. During 2007 the mean number of downloads for OUP is significantly larger than CUP. Maximum download was found from JSTOR for the year 2007 followed by the Springer Link.

10. CONCLUSION

The study shows that there is an upward trend in the usage of e-resources except from Emerald in which download in 2008 decreased from 2007. In 2008, Manipur University downloaded 34,302 articles showing the increase of 41 per cent as compared to the usage in 2007. It is also observed that between the single discipline publishers like ACS and RSC, ACS is significantly more popular than RSC, whereas there is no significant difference in the two physics publishers, i.e., AIP and IOP. Study also found that usage of e-journals of chemistry is more than physics journals. This shows that there is more awareness about UGC-INFONET among the faculty members and students of Department of Chemistry than the students and faculty of Department of Physics. If coverage of e-journals is taken into account, the average downloads for 2007 and 2008 comes to 84 and 34 articles annually from each journal covered in ACS and RSC in the field of chemistry, respectively. Downloads in physics form AIP and IOP were 61 and 25 articles from each journal. Average download from Emerald for each title within its coverage is 53 articles annually. Among multidisciplinary publishers, JSTOR has the highest mean number of downloads (1334 annually) as compared to Springer Link, CUP, and OUP, which on an average have 803, 58, and 90 downloads, respectively for 2007 and 2008. If download from each title is considered, it comes to 0.2, 0.1, 0.4 and 1.1 for Springer Link, CUP, OUP and JSTOR, respectively showing that wider coverage does not lead to more use. But it is more important to identify the resources of these publishers, which have maximum and minimum use, and measure the level of satisfaction of users from such resources. There is a need to conduct such studies further.

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