UGC INFONET DIGITAL LIBRARY CONSORTIUM RESOURCES: AN ANALYTICAL STUDY OF USAGE PATTERN IN UNIVERSITY OF HYDERABAD

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ABSTRACT

The technological advancements have made radical changes in the conventional system of information processing/dissemination. The role of consortia is highly remarkable in distributing scholarly e-resources to institutions in huge quantities. Paper examines the usage pattern of the UGC Infonet Digital Library Consortium 16 full text databases in relation to the usefulness of the resources in University of Hyderabad, India for the period 2010 -2012. The findings indicate that 92% of usage of titles (e-resources) wherein 9 databases were utilized 100%. The analytical study indicates that 0.26% of titles contributed to 30% of usage, 1.57% of titles resulting in 27% of downloads, whereas 98.17% titles yield only 43% of usage, which means hardly 2% of titles are producing for more than 50% of usage and nearly 98% of titles do not result in 50% of usage. Based on the results, it is suggested that consortia or academic institutions need to identity the core resources and assess the levels of usage/usefulness of peripheral titles as well conducting an in-depth survey/study to mark the changing users preferences before subscribing/unsubscribing expensive databases for the institutions and also to know the gaps in the system.

Keywords: UGC INFONET, Library Consortium, User Studies, University of Hyderabad, E-Journals, INFLIBNET.

1. INTRODUCTION:

The library consortia is one of the major implications of ICT advancements in Information industry for maximizing the availability of scholarly resources in electronic format to academic and research communities at shared cost. The exceptional growth of scholarly resources in electronic format especially in the form of databases, the diversified user needs in academic institutions, financial crunch and lack of self-sustainability lead to the formation of consortium. The model has been successful in developed as well as developing countries in facilitating the cost-effective scholarly resources as well as services.

Though the rationale of consortia emerged out of the conventional library cooperation for Inter Library Loan services, it has been caring more about increasing academic resources and allied services to their member organizations to a larger extent for alleviating the crisis for scholarly resources by means of negotiating the cost of e-resources and favourable terms & conditions of supply and use, by promoting skills and expertise to effectively handle the e-resources as well as user centric services. Allen and Hirshon (1998) described that 'Library consortia reflect shift from organizational self-sufficiency to collaborative survival mode among libraries'.

These e-resources deliver data/information as full text articles, journals/books databases, image collections, numerical, graphical databases and other multimedia products. These electronic information products are distributed through CD ROM/DVD, on tape, and via internet leaving an unbelievable impact on the collection management of university libraries due to the enormous capabilities of manipulating data, information retrieval, cost beneficial/effective means of getting information access, savings in storage and maintenance etc. During past two decades developmental efforts in the line of resource sharing have been considerably taken up in India also in the line of developed countries such as - the formation of library networks CALIBNET in 1986, DELNET in 1988, MALIBNET, etc. and also the establishment of library consortia.

The establishment of INFLIBNET (Information Library Networks) by UGC in 1988 is a landmark in the history of scholarly communication, networking of academic institutions and libraries as well as resources in the country. Though many libraries in India came together voluntarily for sharing resources by forming networks, the most prominent among them for academic sector are INDEST in 2002 and UGC Infonet E-journal consortia since 2004. These consortia have been hosting a large number of electronic resources to their member institutions. UGC Infonet Digital Library Consortium under the auspices of UGC and the INFLIBNET (Information and Library Network) Centre, Ahmadabad emerged as a super gateway for university academic community in India providing access to expensive scholarly resources (both primary and secondary resources) in electronic form since 2004 at free of cost. The consortium initiated providing access to online databases for 50 universities and has reached now to 419 institutions in phase manner and the process was continuing by incorporating more new members and licensing to additional databases. Presently the consortium is providing online access to **10000 plus** peer-reviewed current journals + backfiles, monographs through 24 full text databases, 6 bibliographic data portals covering almost all the disciplines in arts; humanities; social sciences; sciences.

2. ASSESSMENT OF FULL TEXT DATABASES

Although several studies in India as well as overseas have confirmed that these e-resources had phenomenal impact on academic world and on library collection management both quantitatively or qualitatively due to their wide range of availability, it is also essential to identify the useful among the voluminous collections of e-resources that are available to academic community through publishers/aggregators or even through consortia. Large number of use studies has been coming up applying both survey methods and analytics, assessing the usage of e-resources quantitatively and qualitatively. Some relevant studies are reviewed here in this context.

RELEVANT STUDIES:

Sarasvady and Khatri (2007) conducted a brief survey on the use of electronic journals in 6 selected libraries i.e. two from universities and four from colleges. The survey of 100 respondents revealed that there was correlation between the availability of electronic collections and awareness over the past ten year's period. Users have knowledge about availability of electronic resources, but many use them as the supplementary way to use information. However, the user's preferences for the electronic format were noticed higher in biomedicine and engineering disciplines especially among the young users. A large number of participants need

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resort to the electronic format as the number of electronic journals was increasing and print versions were decreasing. The participants in Social Sciences and Mathematics and the older users were reluctant to electronic format to a notable degree. The young users were inclined for electronic journals particularly for study, research and career, whereas older participants were using them for research and teaching. Francis (2012) examined the utilization of consortia-based digital information resources in Kerala Agricultural University, Thrissur during 2008- 2010 by surveying 140 post graduate and doctoral students. It was found that the 100% students using internet based information resources, 91.43% online journals, 69.29% CD-ROM databases and 25.71 % online databases respectively. Their preferred location to access the digital information resources is the computer centre and then college and university libraries. 82% students were acquainted with CeRA consortium and learned the required skills for accessing digital information resources through curriculum-based courses like 'library and information services', 'research methodology', etc. The students wanted the CeRA services to be strengthened by adding more resources and facilities. Major problems faced while using CeRA were nonavailability of many essential resources, difficulty in locating relevant resources due to less expertise in search tools, low-speed of internet, limitation in working hours, non-availability abstracting and statistics databases, non-availability of union catalogue of resources, difficulty in finding relevant information, etc. Sohail and Ahmed (2011) observed from their survey to find the usage pattern and preferences of teachers, research scholars and PG students regarding Ejournal consortium in Aligarh Muslim University (AMU) that 55% of the respondents were aware about the UGC -Infonet programme and 86.67% felt that there should be a regular training programme to make effective use of consortium resources. 91.67% of the respondents have recommended for print journals in addition to electronic. The respondents were of the opinion that more number of e-journals should be included in the UGC-Infonet Consortium conducting regular orientation/Training programmes while providing more number of computer terminals, network accessibility, regular power supply and other infrastructure facilities for the improvement of internet speed.

Assessment of e-resources qualitatively and quantitatively as per their usage has always been a challenging task for libraries and consortia. Apart from survey methods, usage statistics is being considered as a supportive measure for justifying investment on library resources, especially the electronic, since they require long-term financial commitment and intense evaluation. COUNTER and SUSHI (Standardized Usage Statistics Harvesting Initiative) standards enabled the task of consortium or institution administrators much easier by automatically getting the usage statistics and minimizing the time involved in manual process. The SUSHI standard has enabled the systematic harvesting of usage statistics providing usage data to their member institutions and subsequent analysis will be done by the consortium.

Premchand and others (2006) mentioned the growing emphasis of usage statistics of electronic journals, their increasing use in universities in North East region. The study highlighted the application of COUNTER statistics for assessing the use of various e-resources in 9 universities located in North East region for the period of 2005 (January to December). The study revealed that the usage of ACS database was very high, whereas Biological Abstracts was the lowest. Among the universities Tejpur University was the highest with 12255 article downloads and Nagaland was the lowest with 366 downloads. Among 100 universities in the consortium, Tejpur University attained 28th position, whereas the other North east universities were ranging between 64th and 99th positions, indicating the variations in awareness of e-resources. Pradhan and others (2012) presented the university–wise, database-wise and title-wise usage data that the Infonet SUSHI Usage Portal provides for 15 publishers available under the Consortium. Arora and others

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(2013) examined the impact of UGC-INFONET Digital Library Consortium program on research activity in the universities by correlating the research output data obtained through three citation indices, namely Science Citation Index, Social Sciences Citation Index and Arts and Humanities Citation Index for the first 50 universities. The findings indicated that the number of research articles published were increased by more than 75% in past 5 years, i.e. from 2005 to 2009 in comparison to the previous block of 5 years, i.e. 2000 to 2004. The Pearson correlation coefficient in this case with 50 points and 48 degrees of freedom is 0.680, which is significant at the 5.66 \times 10–8 level. Moreover, a strong positive correlation is found between the number of articles published by these 50 universities from consortium e-resources and the research articles published by them. However the influence of other factors such as the number of researchers and level of research funding on this correlation was also highlighted in the discussion.

The information and communication technologies have made radical changes in the conventional system of information processing/dissemination and most of the universities with their multiple campuses are migrating e-resources by becoming the members of consortia. Consortia are distributing scholarly e-resources packaged by the publishers to their member institutions in huge quantities and the institutions are experiencing the heavy downpour of scholarly resources than ever before. The usage metrics also have been revealing the facts and figures of the usage of databases though the usage pattern is varied for every database and also according to the titles bundled in them. Thus it is essential to examine the usage pattern of the databases in relation to the usefulness of the resources assessing their levels of usefulness.

SCOPE OF THE STUDY AND METHODOLOGY:

Thus it is proposed to assess the usage and usefulness of the full text e-resources available through UGC Infonet Digital Library Consortium databases to University of Hyderabad, Hyderabad, India. University of Hyderabad is one of the premiere higher educational institutions of the country rewarded for its remarkable endeavours in academics and research. The university campus is equipped with modern ICT infrastructure connecting to all departments and the library. Library has its credits for automation of in-house operations, acquisition of e-resources and digitization activities etc. and also involved in initial surveys conducted by the INFLIBNET prior forming the consortium for registering the university priorities. University of Hyderabad was one of the 50 core universities selected initially by the consortium to provide important online databases for their academic community apart from library's direct subscriptions. The university has been maintaining its position all through in the first five as per the usage of consortium resources. Currently university is getting full text databases, bibliographic data portals through library subscriptions (around 20) and the UGC Infonet Digital Library consortium (24).

The usage and usefulness of e-resources in databases was measured by means of the number of the full text article downloads recorded against titles/databases based on the year-wise or monthwise provided by the UGC Infonet Digital Library Consortium to University of Hyderabad. The period of study was set to three years i.e. 2010 -2012, ever since the title-wise usage data is made available through the Consortium's SUSHI Usage statistics portal for 16 full text databases. For the analytical study the data pertaining to journals and usage was obtained from the university library records and the corresponding usage data from the consortium and also through publisher's portals. Databases without title wise usage data i.e. JSTOR, EPW were excluded from the study. The usage and usefulness of 16 full text e-resources were assessed year-wise as Vol.4 (1) Jan-Mar, 2014

well as database-wise by identifying.

- The percentage of e-resources (titles) used out of those available in databases
- The percentage of usage (downloads) recorded against each database in the total for the year
- Database categories 'highly useful', 'useful' and 'less useful' as per the article usage (counts of article downloads). The full text databases accounted above 10% of the total usage were categorized as 'highly useful', 5% to 9.99% were termed as 'useful' and those contributed less than 5% usage were called as 'less useful'.
- The categories of titles in the databases as 'core', 'semi-peripheral' and 'peripheral' as per their usage. Accordingly, the titles recorded above 5000 article downloads were considered as core, 1000 to 4999 downloads were semi-peripheral and below 1000 downloads as peripheral in the respective database for the year.

3. ANALYSIS AND FINDINGS

From the data pertaining to the number of resources available and the article downloads from all the 16 databases during the period 2010-2012, it is observed that on an average 5142 resources (5734 available) were accountable for downloading 583865 articles. The usage as per the articles downloaded from the databases are ranging from 46 to 282095. The usage of all full text databases as per the counts of article downloads was 374625 against 4379 titles (5129 available) for the year 2010, 698384 from 5558 (6035 available) resources for 2011 and 678585 from 5489 titles (6037 available) for 2012 respectively.

Usage of Titles in Databases

The number of titles recorded in databases with full text downloads is presented database wise and year wise in table 1 mentioning the respective averages for the period.

	Table 1. The Ferenage (70) Three Used VS. Available										
	Database	2010 Available (Used)	2011 Available (Used)	2012 Available (Used)	2010-11 Available (Used)	% of Usage					
1	ACS	37	37	37	37	100					
2	AIP/APS	28	28	28	28	100					
3	Annual Reviews	33	33	33	33	100					
4	Cambridge Journals Online	224 (202)	224 (221)	224 (216)	224 (213)	95					
5	Elsevier	34	1036	1036	702	100					
6	IOPP	46	46	46	46	100					
7	Nature	1	1	1	1	100					
8	OUP	206	206	206	206	100					
9	Portland Press	8	9 (8)	9 (6)	8 (7)	85					
10	PROJECT Euclid	22	35 (18)	35 (18)	31 (19)	63					

 Table 1: The Percentage (%) Titles Used vs. Available

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11	Project Muse	411 (182)	493 (358)	493 (408)	466	68
	Royal Society	(102)	(550)	(100)	(510)	
12	of	29	29	29	29	100
	Chemistry					
12	SIAM Online	14	14	14	14	
13	SIAM Online	(12)	(13)	(10)	(12)	80
14	Springer Link	1763	1763	1763	1638	
14		(1663)	(1757)	(1616)	(1679)	95
15	Taylor &	1365	1173	1173	1237	
15	Francis	(968)	(859)	(891)	(906)	73
16	Wiley-	008	008	008	008	
10	Blackwell	908	908	908	908	100
	Total	5129	6035	6037	5734	92
	10101	(4379)	(5558)	(5489)	(5142)	

Further, it is observed from table1 that in 9 databases articles were downloaded from all the titles establishing 100% utility on average, whereas in other 7 databases - CJO, Portland Press, Project Euclid, Project Muse, SIAM and Taylor & Francis all the titles were not utilized during the period. Thus 85% resources were used in 2010 from all 16 databases, 92% in 2011 and 91% in 2012 as illustrated vide Chart 1.

On the whole, 92% of utility of e-resources is noticed from the consortium databases for the period of 3 years 2010-12.

Usage of Databases as per Article Downloads

The years wise count related to the usage (article downloads) of databases are presented in table 2, mentioning the corresponding percentages within parentheses. Their averages for the period are mentioned at the end. From the table it is noticed that only 3 databases recorded above 10% usage and can be marked as 'highly useful'. Elsevier Sciencedirect, was the highest with 30.66% (179028 downloads) followed by ACS with 22.50% and Wiley/Blackwell with 11.30% (65965 downloads). The year wise counts are more or less near to their averages of 3 years, except for Elsevier in 2010 wherein number of journals available was very less.

	Table 2. 1 Creentage (70) Of Databases Usage											
	Database	2010 Downloads (%)	2011 Downloads (%)	2012 Downloads (%)	2010-12 Average Downloads (%)							
1	ACS	118045 (31.51)	130669 (18.71)	145420 (21.43)	131378 (22.50)							
2	AIP/APS	26268 (7.01)	35078 (5.02)	29334 (4.32)	30227 (5.18)							
3	Annual Reviews	8780 (2.34)	7341 (1.05)	8775 (1.29)	8299 (1.42)							
4	CJO	4201 (1.12)	5634 (0.81)	5189 (0.76)	5008 (0.86)							

 Table 2: Percentage (%) of Databases Usage

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~	F 1	21460	282095	233528	179028	
Э	Elsevier	(5.73)	(40.39)	(34.41)	(30.66)	
6	IODD	14010	13794	12068	13291	
0	IOPP	(3.74)	(1.98)	(1.78)	(2.28)	
7	Natura	15227	16819	9703	13916	
/	Inature	(4.06)	(1.98)	(1.43)	(2.38)	
0	OUD	21196	24038	27321	24185	
0	OUP	(5.66)	(3.44)	(4.03)	(4.14)	
0	Portland	1232	1467	1931	1543	
9	Press	(0.33)	(0.21)	(0.28)	(0.26)	
10	PROJECT	117	79	63	86	
10	Euclid	(0.03)	(0.01)	(0.01)	(0.01)	
11	Project	6586	7767	8543	7632	
	Muse	(1.76)	(1.11)	1.26	(1.31)	
10	PSC	24498	35148	50561	36736	
12	KSC	(6.54)	(5.19)	(7.45)	(6.29)	
12	SIAM	61	46	97	68	
13	Online	(0.02)	(0.01)	(0.01)	(0.01)	
14	Springer	52581	60461	42870	51971	
14	Link	(14.04)	(8.66)	(6.32)	(8.90)	
15	Taylor &	14098	8762	20739	14533	
15	Francis	(3.76)	(1.25)	(3.06)	(2.49)	
16	Wiley-	46265	69186	82443	65965	
10	Blackwell	(12.35)	(9.91)	(12.15)	(11.30)	
	Total	374625	698384	678585	583865	
		(100%)	(100%)	(100%)	(100%)	

* Full Text databases - EPW and JSTOR Excluded

Similarly, from the year wise data it is observed that 3 databases contributed 57.9% to usage in the year 2010 as illustrated in chart 2. In 2011 only 2 databases accounted 59.10% usage, 4 databases 28.62% and 10 databases 12.28% of usage. For the year 2012, 3 databases resulted 67.99%, 2 databases 13.27% and 11 only 18.24% usage.

On an average, 3 databases viz. ACS, Elsevier and Wiley Blackwell are labeled as 'highly useful' out of 16 listed, recording above 10% usage on an average and together contributing 64.46% of usage. 3 databases (Springerlink RSC and AIP/APS) the usage ranging between 5-10% were identified as 'useful' and added 20.37% usage, while the remaining 10 databases were used less contributing only 15.17% usage for the period as indicated in chart 3.

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Levels of Usage of Databases

From title-wise usage (article downloads) data obtained for each database much variation is observed among the full text resources. The number of titles identified under 3 categories i.e. 5000 above (core); 1000-4999 (semi-peripheral) and below 1000 (peripheral) and the corresponding usage data are presented in table 3.

	Database / Downloads		2010			2011			2012		
			5000 above	1000- 4999	1-999	5000 above	1000- 4999	1-999	5000 above	1000- 4999	1-999
1	ACS	Titles	5	18	14	5	21	11	6	18	13
	ACS	D	73801	38442	5802	81994	42930	5745	101372	38009	6039
2		Titles		8	20	2	8	18	1	7	20
	AIP / APS	D	-	23063	3187	12042	20141	2895	5302	19677	4355
3	Annual Daviana	Titles	1	_	33	1	—	33		1	32
	Annual Keviews	D		_	8780		—	7341		1377	7398
4	CIO	Titles	1	_	202	1	—	221		_	216
	CJU	D	-	_	4201	+	—	5634		_	5181
5	5 Elsevier/ Sciencedirect	Titles		2	32	3	50	982	4	50	982
		D		2801	18659	40364	86743	154988	57894	81945	160958
6	IODD	Titles	-	2	44	+	4	42		3	43
	IOFF	D	-	2879	9007	+	5721	8073	_	4554	7514
7	Noturo	Titles	1	—	—	1	—	-	1	—	—
	Inature	D	15227	_	—	16819	—	-	9703	_	_
8	OUP	Titles	_	4	202	-	4	202	_	5	201
	001	D	-	8986	12210		9009	15030	_	10586	16735
9	Portland Pross	Titles		_	8		—	8	_	_	6
	r offialid r fess	D	-	—	1232		—	1467	_	—	1931
10	Project Fuelid	Titles		_	22		_	18	_	_	18
	FIOJECT EUCIIO	D			117			79			63
11	Project Muse	Titles	_	—	277		—	391	_	1	407

Table 3: Levels of Usage of Databases 2010-2012

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		D	_	—	3331	—	_	7767	_	1554	6989
12	DSC	Titles	1	6	22	2	5	22	2	8	19
	KSC	D	7876	12487	4135	17838	10494	6816	22985	21965	5611
13	SIAM Online	Titles		—	12	—	—	13	—	—	10
	SIAM Online	D	_	—	61	—	—	46	—	-	97
14	Carrie con Linh	Titles	_	1	1662	—	2	1755	—	1	1615
	Springer Link	D		1582	50999	—	2718	57743	—	2599	40271
15	Toylor & Enoncie	Titles	_	—	968	—	—	859	—	-	891
	Taylor & Francis	D	_	—	14098	—	—	8762	—	_	20739
16	Wiley-Blackwell	Titles	1	4	903	2	5	901	3	4	901
		D	11397	11229	23639	20281	10264	38641	34425	5432	42586
	Totals	Titles	8	45	4326	15	99	5444	17	98	5374
		D	108301	101469	164855	189338	188020	321026	231681	187698	259206

Table 4: Levels of Usage of E-Resources 2010-2012

	CORE		SEMI PER	IPHERAL	PERIPHERAL		
Year	(= > 5000)		(1000-	4999)	(<1000)		
/Average	No. of Downloads		No. of	Downloads	No. of	Downloads	
	Titles		Titles		Titles		
	(Databases)		(Databases)		(Databases)		
2010	8 (4)	108301	45	101469	4326	164855	
2011	15 (6)	189338	99	188020	5444	321026	
2012	17 (6)	231681	98	187698	5374	259206	
Average	13 (3)	176440	81 (3)	159062	5048 (10)	248362	
%	0.26	30	1.57	27	98.17	43	

The data of table 3 was summarized and presented in table 4 for examining the usage pattern of 3 categories of titles in databases. It is noticed from the table 4 that 8 core titles belonging to 4 databases contributed 108301 downloads in the year 2010. The number of core titles increased from 8 to 15 from 6 databases in 2011 resulted in 189338 downloads, while 17 titles of same 6 databases are producing 231681 downloads. Semi peripheral titles are ranging between 45 and 99 with an average of 81, whereas peripheral titles are found numerous ranging from 4326 to 5444 as indicated in chart 4.

The chart indicates that on an average 0.26% of titles contributed to the 30% usage, 1.57% of titles resulting in 27% download, whereas 98.17% titles used 43% of usage of Infonet databases.

4. DISCUSSION AND CONCLUSION

The availability of electronic information resources in the form of full text collections/databases and usage are two different factors, however the credibility of the collection lies in their utility. The above findings indicate that 92% of usage of titles (e-resources) from the UGC Infonet Digital Library Consortium databases wherein 9 databases were utilized 100% during 2010-2012. These observations are remarkable and highlighting the efforts of the consortium, member institutions and also to the academic fraternity. The point to be addressed here is among 16 only 3 databases viz. ACS, Elsevier and Wiley Blackwell were accounted for 64.46% usage and another 3 added 20.37% downloads, whereas the maximum number (10) of databases were used very less contributing to 15.17% usage on average during the period. Though 92% of resources (titles) are found used from databases, only 0.26% (8 titles) were identified as especially core from 4 databases, contributing the maximum usage of 176440 downloads. However, the number of core titles was found increasing from 8 to 17 (from 6 databases) during the

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period of 3 years. Semi peripheral titles are ranging between 45 and 99 registering a moderate average of 81, whereas huge quantities of peripheral titles are found in these three years period ranging between 4326 and 5444. The above counts about the number of resources and their usage pattern give an understanding that only on an average 0.26% of titles contributed to 30% of usage, 1.57% of titles resulting in 27% of downloads, whereas 98.17% titles yield only 43% of usage of Infonet databases, which means hardly 2% of titles are producing for more than 50% of usage, whereas nearly 98% of titles together are not even resulting in 50% of usage (downloads).

Indian universities constitute one of the largest higher education systems in the world contributing to the scientific research. Undoubtedly, it is a great challenge to the academic and research institutions to ensure scholarly information resources and facilitating effective communication among academic and research communities. The UGC, ICAR, AICTE, National Knowledge Commission, National Knowledge Network, National Innovation Council, etc., have been leading in the country for facilitating the resources over consortia based networks.

The findings emphasize that some databases are heavily used compared to some moderately used, whereas 8% of titles remained unutilized. The usage pattern of databases at individual resource (title) level, few titles were responsible for the maximum usage recorded for the databases and others remained for peripheral use. These results are not only reemphasizing the popular Brandford's law of journal articles but also showing the use levels and usefulness of the material acquired by the institutions through consortium. The consortia or academic institutions need to identity the core resources and assess the levels of usage and usefulness of such peripheral titles. An in-depth survey/study need to be piloted institution-wise periodically to mark the changing users preferences before subscribing/unsubscribing expensive databases for the institutions and also to know the gaps in the system.

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