SCIENTISTS IN DIGITAL INFORMATION ENVIRONMENT : A STUDY

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Abstract

Access to digital information resources by the scientist of six leading institutions located in Manipur has been analyzed on various aspects. This purpose of information needs, the way to get the information, different access points, access to Internet and OPAC are covered. Preference on resources including digital sources has been given stress. Understanding the problems encountered by the scientist, suggestions have also been drawn from them to draw solutions.

Keywords : Scientists; Digital Environment; Manipur.

1. INTRODUCTION

Information technology (IT) has a considerable impact in all fronts. Library and Information Centre is also not an exception to this. With the advancement made in IT there has been a tremendous change in information resources also. Today such resources are available in digital formats. The information held in such forms can be of several things at once, a multimedia fusion not just of sound, text and image but animation, video clips, etc. Such resources play a vital role in providing ready-made information at the right time to the right users. They have a distinct and specific characteristic unlike other documentary forms of sources. Scientists, who are engaged in different areas of specializations are supposed to be the specific group of users of digital information resources. In our paper, based on a survey an attempt is being made to study critically the scientists engaged in different sectors in Manipur about their information needs, access to such resources, levels of their satisfaction, problems they encountered, availabilities of such facilities, etc. The paper also aims to suggest for a new system through which the scientist can access to meet their requirements.

2. THE SCIENTISTS

The present study covers scientists from six important National and Local institutions located in Manipur, such as: (a) Manipur University (M U); (b) Regional Institute of Medical Sciences (RIMS) ; (c) Central Agricultural University (CAU); (d) Indian Council of Medical Research (ICMR); (e) Indian Council of Agricultural Research (ICAR) and (f) Institute of Bio-resource and Sustainable Development (IBSD).They are mostly designed as teachers, research scholars, administrators, research fellows, scientists etc. The representation of scientists from these institutions is: MU=40; RIMS=28; CAU=16; ICMR=05; ICAR=07; IBSD=12. As such 108 (one hundred and eight) scientists are taken into account of which 35(32.41%) are female and 73(67.59%) are male. They belong to the age group 23 to 45 above years. As regards their qualifications 57 of them are P.G., 7 are M.Phil. 35 are PhD holders, the remaining 9 scientists posses other specialized qualifications. 97% of them have computer knowledge and awareness about access to digital information resources.

3. METHODOLOGY

Data are collected from the scientists by conducting a survey through questionnaire. Of the total 120 (one hundred and twenty) questionnaires distributed 111 (one hundred and eleven) duly filled in questionnaires were received during May – August 2004. Three incomplete questionnaires received were rejected. Thus

response rate was 90 percent. The collected data are presented in tables for analysis. Simple Statistical methods like mean, mean deviation and standard deviation are used to make the study more empirical. In some cases 4 point scales have been adopted to calculate the scores of the responses.

4. Manifestation

The analysis of data has revealed different indications on various aspects of access to digital resources by the scientists as detailed below.

4.1. Purpose of Information Needs

There are several purposes for which the scientists need information. Table-1 shows that their need for information for updating knowledge is highest irrespective of their institutions except to those from IBSD For them the most important purpose is writing paper. Similar emphasis is given to research work by the scientists from ICMR and ICAR.

Table 1: Information Needs N=108

No.	Purpose of information needs	Scientists											
		M. U.		RIMS		CAU		ICMR		ICAR		IBSD	
		Resp.	R/N	Resp.	R/N	Resp.	R/N	Resp.	R/N	Resp.	R/N	Resp.	R/N
01	For Updating Knowledge	40	1st	28	1st	16	1st	5	1st	7	1st	8	3rd
02	For research works	37	3rd	1	6th	9	4th	5	1st	7	1st	9	2nd
03	For academic works	33	4th	4	4th	15	2nd	3	2nd	3	3rd	7	4th
04	For writing paper	38	2nd	10	3rd	12	3rd	2	3rd	4	2nd	12	1st
05	For attending seminar/ conference/ workshop	29	5th	26	2nd	8	5th	3	2nd	3	3rd	5	6th
06	For others	6	6th	3	5th	3	6th	-	-	2	4th	6	5th

Source: Questionnaire R/N =Rank Number

4.2 Ways of Getting Information

Collecting information through reading is found to be given stress by the scientists irrespective of their institutions. As shown in Table 2 similar emphasis is found to be given

Table 2: Ways of Getting Information N=108

Ways of Getting Information	Scientists											
M.U RIMS	CAU	ICMR	ICAR	IBSD								
	Resp.	R/N	Resp.	R/N	Resp.	R/N	Resp.	R/N	Resp.	R/N	Resp.	R/N
By reading literature	37	1st	28	1st	16	1st	5	1st	7	1st	8	1st
By subscribing to journals	32	4th	12	4th	9	4th	3	2nd	7	1st	4	3rd
By accessing to digital inf. sources	36	2nd	20	3rd	12	3rd	5	1st	6	2nd	7	2nd
By watching video, CDs.	35	3rd	25	2nd	14	2nd	5	1st	7	1st	8	1st
By other means	9	5th	8	5th	7	5th	2	3rd	3	3rd	3	4th

Source: Questionnaire R/N =Rank Number

on watching videos, CDs and digital sources by the scientists of ICMR, while journals, videos, CDs by the scientists of ICAR and video, CDs by the scientists of IBSD.

4.3 Access Points

Access points from where the scientists collect information are not similar among them, even though there are similarities among the same group. For MU and RIMS scientists, Institutional Libraries form the most important centre from where they get information followed by their personal collection dominates other access points followed by institutional library, public library and Internet/Cyber cafe laboratory, etc. As the Table 3 highlights, for ICMR and ICAR scientists, it is personal collection and internet/ cyber café from where they access to information sources mostly. In case of IBSD scientists, their institutional library plays an important role in meeting their information needs followed by laboratory, personal collection, etc.

Table 3: Access Points N=108

Access Points	Scientists											
	M.U.		RIMS		CAU		ICMR		ICAR		IBSD	
	Resp.	R/N	Resp.	R/N	Resp.	R/N	Resp.	R/N	Resp.	R/N	Resp.	R/N
Institutional Library	36	1	18	1	13	2	3	2	4	3	10	1
Public Library	24	6	10	4	10	3	2	3	5	2	3	6
Other Library	13	5	6	5	6	5	2	3	3	4	3	6
Personal Collection	12	2	16	2	14	1	5	1	7	1	8	3
Community Information Centre	7	8	4	7	2	8	1	4	2	5	2	7
State Informatics Centre	4	10	3	8	5	6	1	4	4	3	2	7
Laboratory	17	3	12	3	9	4	3	2	3	4	9	2
District Informatics Centre	10	7	5	6	3	7	2	3	2	5	2	7
Internet/Cyber café	14	4	12	3	10	3	5	1	7	1	6	4
Any other	6	9	3	8	2	8	1	4	3	4	4	5

Sources: Questionnaire R/N: Rank Number

4.4 Access to Internet

About 90 percent of the state scientists are found to access to internet in the process of collecting information. Table 4 indicates that scientists of RIMS have maximum (96.4%) access which is followed by scientists of MU (95%), IBSD (83.33%), CAU (81.2%), ICMR (80%) and ICAR (71.4%) respectively.

Table 4. Access to Internet N = 108

Sl.No.	Scientists	Yes (%)	No (%)	Total (%)
01	MU	38 (95%)	2 (5%)	40 (100%)
02	RIMS	27 (96.4%)	1 (3.57%)	28 (100%
03	CAU	13 (81.2%)	3 (18.75%)	16 (100%)
04	ICMR	4 (80%)	1 (20 %)	5 (100%)
05	ICAR	5 (71.4%)	2 (5%)	7 (100%)
06	IBSD	10 (83.33%)	2 (5%)	12 (100%)
	Total	97 (89.82%)	11 (10.18%)	108 (100%)

Source: Questionnaire

4.5 Search Tools/ Engines used

For those scientists who have access to internet, when asked further, their response on the use of search tools are varied. Goggle is found to be the dominant tool for them. As shown by Table 5, the number of scientists using Yahoo is also high. Use of other tools is relatively low.

Table 5 :Use of Search Engine/Tools N=97

Search tools	**S c i e n t i s t s**					
	M.U	**RIMS**	**CAU**	**ICMR**	**ICAR**	**IBSD**
Goggle	32	26	13	4	5	10
Yahoo	27	13	12	6	5	10
AltaVista	18	15	7	3	3	3
Excite	12	10	6	2	1	2
Others	10	8	3	-	-	6

Source: Questionnaire

4.6 Purpose of Access to Internet

E- Mail is considered to be the most important purpose why the scientists access to internet. As revealed by Table 6, scientists of different groups give relative importance to the purposes like, academic website, e-journals and online databases.

Table 6 : Purpose of access to Internet N=97

Purpose	Scientists					
	MU	RIMS	CAU	ICMR	ICAR	IBSD
E-mail	38	25	13	4	5	10
Academic website	26	19	8	3	3	8
E-Journals	18	12	7	2	4	3
Online database	17	14	6	4	2	6
Others	8	7	2	1	3	2

Source: Questionnaire

4.7 Access to OPAC

It is not encouraging that only 40.7% of the scientists know and access to OPAC. CAU and IBSD scientists on the other hand, have no access to the same. As indicated by Table 7 implementation/ introduction of OPAC in different library organizations of the state requires to be studied.

Table 7: Access to OPAC N=108

Sl.No.	Scientists	Yes (%)	No (%)	Total (%)
01	M.U.	26 (65%)	14 (5%)	40 (100%)
02	RIMS	12 (42.8%)	16 (57.1%)	28 (100%
03	CAU	-	16 (100%)	16 (100%)
04	ICMR	4 (80%)	1 (20 %)	5 (100%)
05	ICAR	2 (28.5%)	5 (71.4%)	7 (100%)
06	IBSD	-	12 (100%)	12 (100%)
	Total :	**44 (40.7%)**	**64 (59.2%)**	**108(100%)**

Source: Questionnaire

4.8 OPAC Access Points

Those who have access to OPAC disclosed their access points. Institutional Library, campus network and online facilities are important such points as Table 8 shows.

Table 8 : OPAC Access Points N = 44

OPAC Access Points	Scientists					
	MU	RIMS	CAU	ICMR	ICAR	IBSD
In Library	13	4	-	2	-	-
In Departmental Computer through campus network	18	3	-	3	1	-
Through online over internet	6	10	-	1	2	-
Others	1	-	-	-	-	-

Source: Questionnaire

4.9 LAN System

The scientists who understand existence of LAN system in their respective institutions are found to access the system as shown by Table 9. However their level of satisfaction for the system is not up to the mark.

Table 9 : Existence of LAN system N =108

Sl.No.	Scientists	Yes (%)	No (%)	Total (%)
01	M.U.	36 (90%)	4 (10%)	40 (100%)
02	RIMS	10 (35%)	18 (64.2%)	28 (100%
03	CAU	9 (56%)	7 (43.7%)	16 (100%)
04	ICMR	2 (40%)	3 (60 %)	5 (100%)
05	ICAR	3 (42%)	4 (57 %)	7 (100%)
06	IBSD	9 (75%)	3 (25%)	12 (100%)
	Total	69 (63.8%)	39 (36.11%)	108 (100%)

Source: Questionnaire

4.10 Preference to Information Resources

Preference on the use of resources by the scientists has a distinct feature. From Table 10 it is clear that scientists of MU do prefer most on non - documentary and Electronic/digital

sources. In case of those of RIMS and CAU the most preferred source is digital sources, whereas it is documentary source in case of ICMR scientists. Non-documentary sources have been given more preferences by the scientists of ICAR and IBSD.

Table 10 : Preference of Information Resource N=108

Resources	Scientists											
	M.U		RIMS		CAU		ICMR		ICAR		IBSD	
Score Devn.	Score	Devn.	Score	Devn.	Score	Devn.	Score	Devn.	Score	Devn.		
A	28.91	0.16	22.07	18.30	9.24	-1.12	6.08	1.5	4.58	-0.2	7.08	-1.58
B	31.16	2.41	21.99	4.92	11.91	1.55	5.08	0.5	6.58	1.8	11.58	2.92
C	29.79	1.04	22.16	5.09	12.74	2.38	4.08	-0.5	4.91	0.13	9.91	1.25
D	25.14	-3.61	2.08	-14.9	7.58	-2.78	3.08	-1.5	3.08	-1.7	6.08	-2.58

Source: Questionnaire

A= Documentary Sources; B= Non-Documentary sources; C= Digital Information; D= Others

MU: Mean = 28.75 ; S.D = 2.23; RIMS: Mean = 17.07 ; S.D = 4.33; CAU: Mean = 10.36 ; S.D = 2.06; ICMR: Mean = 4.58 ; S.D = 1.12 ; ICAR: Mean = 4.78 ; S.D = 1.24; IBSD: Mean = 8.66 ; S.D = 2.19. (S.D= Standard Deviation).

4.11 Preference on Digital Resources

Among the digital resources, floppy diskettes occupy the position of the most preferred source by all the scientists except those of IBSD. As evident from Table 11, similar preference is given to CD-ROM and others by the scientists of RIMS, DVDs by ICMR scientists and CD-ROM by the scientists of ICAR. Bulletin board is preferred by most by the scientists of IBSD. Thus preferences of the scientists on the use of digital resources are not similar among the different reference groups.

Table 11. Preference on Digital Information Resources N=108

Resources	Scientists											
	MU		RIMS		CAU		ICMR		ICAR		IBSD	
Score Devn.	Score	Devn.	Score	Devn.	Score	Devn	Score	Devn.	Score	Devn.		
CD-ROM	35.16	1.76	29.08	2.30	12.41	-0.13	4.58	-0.85	8.08	1.67	12.08	0.70
DVDs	38.58	5.18	25.41	-1.37	11.07	-1.47	6.08	0.65	6.08	-0.33	10.41	-0.97
Floppy Diskettes	41.08	7.68	29.08	2.30	17.08	4.54	6.08	0.65	8.08	1.67	13.08	1.70
E-Journals	30.23	-3.17	22.66	-4.12	11.40	-1.14	5.58	0.15	5.41	-1.00	8.91	-2.47
Bulletin Board	39.58	6.18	28.08	1.30	14.08	1.54	5.08	-0.35	6.08	-0.33	17.08	5.70
Video CDs	28.14	-5.26	24.08	-2.70	9.16	-3.38	5.58	0.15	6.08	-0.33	8.24	-3.14
Others	21.80	-12.3	29.08	2.30	12.58	0.04	5.08	-0.35	5.08	-1.33	9.91	-1.47

Source: Questionnaire

MU: Mean = 33.40 ; S.D = 6.31 RIMS: Mean = 26.78 ; S.D =2.34 CAU: Mean = 12.54 ; S.D = 2.33 ICMR: Mean = 5.43 ; S.D = 0.52 ICAR: Mean =6.41 ; S.D = 3.05 IBSD: Mean = 11.38 ; S.D = 2.80. (S.D= Standard Deviation)

4.12 Problems

As responded, 68.52% of the scientists (74 scientists out of 108) have problems in the use of digital information resources. The same is reflected in Table 12 below :

Table12 : Problems Encountered by the Scientists N = 44

Problems	Scientists					
	MU(26)	RIMS(21)	CAU(12)	ICMR(03)	ICAR(4)	IBSD(8)
Limited Number of Machines	21	12	9	2	3	6
Internet Speed is very slow	25	19	12	3	4	8
System is not user points	08	09	10	2	3	7
Do not understand the process	13	10	07	2	2	3
Resources are not sufficient	06	13	8	3	2	5
Information is not up to date	02	06	7	1	2	6
Others	07	02	03	01	-	-

Source: Questionnaire

The problems encountered by scientists are many. It is a common problem for all of them that the existing speed of internet is very slow/ poor. In most of the institutions there are limited numbers of machines. For the scientists of CAU, lack of user friendliness of the system is rated highest.

4.13 Suggestions

The scientists also suggested different points to overcome the problems and difficulties as well as for the all round development of the system. Some of the important points as suggested by them are listed below:

- Sufficient number of machines should be made available in the institutions.
- The state should have its own information network system directly linked to national/ international network /system.
- The system also should be made more users friendly. Bandwidth should be increased to increase the speed of access.
- More fund allocation, regular power supply, up gradation of V-SAT, training for users, etc. should be made as early as possible.

5. CONCLUSION

The present study has revealed that the scientists have the habit of collecting information in the digital information environment. The above discussion shows different aspects of the scientists on the access and use of the digital information resources to meet their needs. In the existing system they also encounter certain problems. To solve the problems digital information providers require to go through their suggestions also. Fulfillment of the complex digital information needs of the scientists can be expected only when the system is fully digitized, friendly, self sufficient, and more speedy.

6. REFERENCE

1. Fecko, M.B. Electronic Resources: Access and Issue. London. Bowker Saur, 1997
2. Pichard, A.J. The impact of access to electronic and digital information resources on learning opportunities for young people: a grounded theory approach. http://informationr.net/ir/4-2/isic/pichard.html.accessedon11/07/2004

3. Bishop, A.P. Measuring access, use and success in digital libraries. Journals of Electronic Publishing. 4,2; 1998.

4. Liff, S, Steward, F and Watts, P. Public access to the Internet: new approaches from Inter Cafes and communication technology centers and their implications for libraries. New Review of Information Networking. 5; 1999. 27-41.

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