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Information Use Patterns by Scientists: A Case Study of NEIST, Jorhat, North East India

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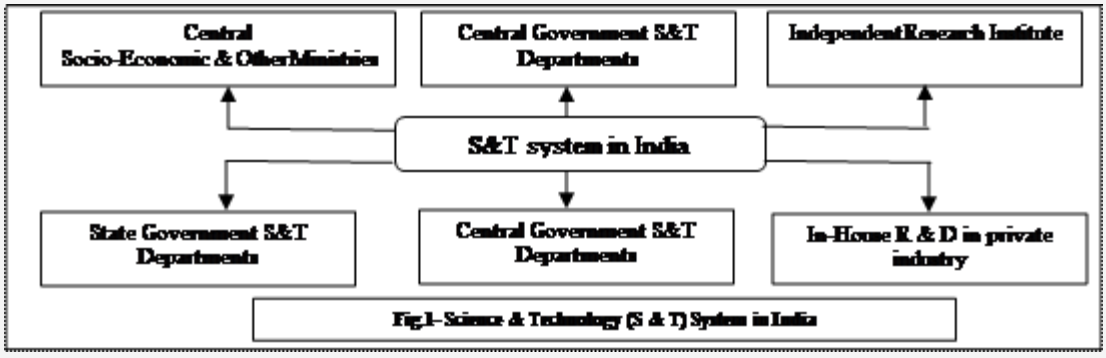
Introduction

Proper and adequate information is indispensable for scientific and economic progress of a nation. A scientist in the broadest sense refers to any person who is engaged in a systematic activity to acquire knowledge or an individual who is engaged in such practices and that are linked to schools of thought or philosophy. Scientists are those individuals who use the scientific method in acquiring information and organize, analyze, and implement it in the area of research.

Scientists depend on communication with fellow scientists, specialists, and experts to keep abreast of current developments. Research workers almost always rely on the work of others scientists working the same field. Scientists frequently search for information on the latest trends and developments. They also acquaint themselves with innovations in their fields. Thus, information helps the scientists be well-informed. Science and technology in India can be visualized from the following figure

figure1.



Science & Technology (S&T) under the auspices of Central Government of India comprises the Department of Science and Technology (DST), Department of Scientific & Industrial Research (DSIR), Department of Atomic Energy (DAE), Department of Space (DoS), Department of Biotechnology (DBT), and Department of Ocean Development (DOD). However, the Council of Scientific and Industrial Research (CSIR), with its 40 institutes dedicated to research and development in well-defined areas and around 100 field stations,

is the major organization under DSIR, including the institutions like National Information System for Science and Technology (NISSAT), and Department of Ocean Development (DOD). There are about 200 national laboratories and an equal number of research & development (R&D) institutes in the Central Sector, with about 1,300 R&D units in the industrial sector and thousands of employees. In addition to R&D establishments, the other major body pursuing S&T activities in India is the country's vast university system comprising 162 universities, 32 institutions deemed universities, and 10 institutes of national importance which are considered to be major sources of S&T, producing around 200,000 S&T personnel every year.

North East Institute of Science and Technology (NEIST)

North East Institute of Science and Technology (NEIST), situated at Jorhat in North East India. It was previously known as Regional Research Laboratory, Jorhat, and it was instituted as a wing of CSIR for research and development in the fields of oil field chemicals, agrochemical, agro technologies for medicinal & aromatic plants, drug & drug intermediates, specialty papers & boards, organic & inorganic chemicals, biochemistry & biotechnology, chemical engineering, geo science & seismicity and building materials. The major thrust of Research and Development (R&D) activities of NEIST has been to develop indigenous technologies and knowledge by utilizing immense natural wealth of the North Eastern Regions of India.

Knowledge Resource Centre

As a policy decision of Government of India, all CSIR laboratories in India were converted to Knowledge Resource Centers (KRC) in 2008 including NEIST Library. Library and Documentation Division, the earlier name of NEIST, Jorhat was established in 1961 to cater to the needs of R&D staff, research fellows, outside students, and universities of North East Region and other R&D and Industrial institutes such as Institute of Biotechnology and Geo-technic studies, ONGC-Jorhat, Cinnamara ONGC complex, Central Muga & Eri Research & Training Institute, Lahdoigarh, Jorhat, etc. The library provided extensive services to the NEIST branch laboratories, which are situated in Itanagar, Arunachal Pradesh and Imphal, Manipur. The KRC of NEIST, Jorhat has rich and outstanding collections of national and international journals, books, Indian and foreign patents, standards, reports, annoted bibliography on Dioscorea composita and D. floribunda, Solanum khasianum, Artemisinin, Genus Artemisia, Zanthoxylum Species, Genus Clerodendron, Cinnamomum Species, natural dyes from plants, Zeolites, Zeolite analogue and Zeotype, Hydrotalcites, Anticancer Agents, Taxol, etc. The library as of 2008 has collection strength of 25,000 back volumes of journals, and 23,000 books, 6,000 Indian and foreign standards, 1.5 lakhs of Indian patents, and 6,000 reports of various national and international organizations, a good quantum of e-sources such as CD-ROMs, DVDs, etc. The library subscribes to 79 foreign and 86 Indian journals. Apart from the information provided by the library under study, it also provides a wide range of facilities such as document delivery service, Internet access, photocopying, electronic mail, etc.

Statement of the Problem

Information has a pragmatic value for scientists during research activities. It is obligatory on the part of the research libraries attached to the R& D institutes to provide information services to scientists. The study focuses on information use patterns by scientists engaged in various research and development programs at NEIST, it is mandatory to ascertain whether the scientists are being provided with the pertinent and genuine information by the libraries. The problems associated with libraries are that scientists are not provided with legitimate information due to multiple factors. Scientists are not being provided with subject gateways in their fields. Hence, it is essential to discover the information needs of scientists.

Objectives of the Study

The objectives of the study are to :

- Determine the information use patterns of the scientists in North-East Institute of Science & Technology, Jorhat.
- Discover the purpose of use of information, and the nature and type of information required by NEIST scientists.
- Investigate the channels through which information is accessed by the scientists of NEIST;
- Ascertain the extent of current information needs and their uses by the scientists; and
- Correlate the frequency of information needs and habit of library use by the scientists;

Significance of the Study

A research library is the nucleus of an information/knowledge center, which apart from supporting learning, teaching, and research needs of scientists, also acts as a platform for access to scholarly resources in electronic form. Growth and change have always been prominent characteristics of libraries. These characteristics give rise to the development of collections and services within the library system. The research library responds both to changes in the needs of scientists and within the field of information technology. Information and communication technologies have revolutionized in collection development, which mainly focuses on digital materials acquired through gateways, portals, consortia, etc., on an Internet platform. The significance of the present study is that it aims at evaluate the flexibility of these libraries in this fluid environment as well as their capabilities in developing a process to integrate these changes into standard library practice in order to meet the current and future needs of the scientists, research associates, and research fellows.

Scope of the Study

NEIST, Jorhat comprises 175 Science & Technology staff, 16 Junior Research Fellow/Senior Research Fellow/Research Associates, and 34 Project Assistants, a total of 225. This laboratory comprises five major disciplines, including chemistry, biology, engineering, materials science, and geoscience. The present study is not limited to any specific discipline.

Methodology

The present study is based on the literature available in the library of NEIST. A structured questionnaire was distributed among the scientists of all the disciplines of NEIST. Data obtained through the questionnaire were tabulated sequentially and supplemented with graphs and analyzed. Interviews were also used for primary data collection. Further, URL site of RRL i.e., NEIST, was also explored to obtain primary sources of information for the study, including a personal visit to the Laboratory to scan the Annual Reports, Highlights, Vision Plan of RRL, etc.

Secondary sources of information, such as unpublished dissertations, research results, published journals, books also were used to make the study more exhaustive and authentic.

Analysis and Findings

Analysis by Designation

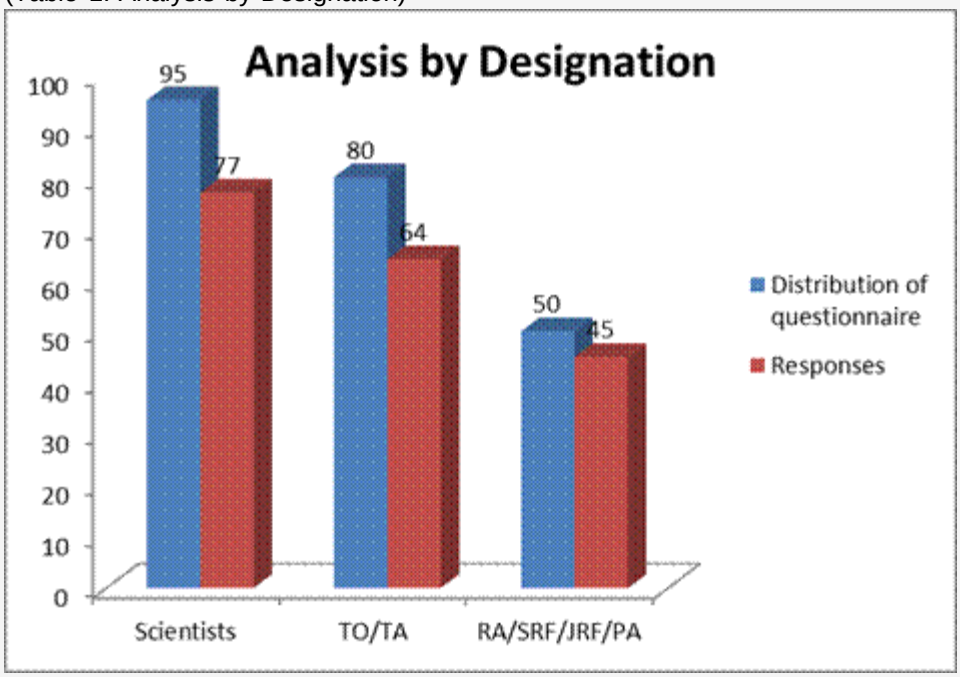
Analysis of responses by designation of the library users' under study has been reflected in Table 1 and Graph-1. Altogether 225 questionnaires were distributed to the scientific users in KRC, NEIST, which include 95 scientists, 80 TO/TA and 50 RA/SRF/JRF and PA. Out of 225, a total number of 186 filled-in questionnaires were received which constitute 82.67%.While analyzing the table it was revealed that, the users belong to the category of RA/SRF/JRF and PA falls maximum which constitute 90% followed by scientists (81.05%) and TO/TA (80%). This shows that research scholars to the use of information in KRC.

Sl. No.	Designation	Questionnaire Distributed	No. of Response	% of Response
1.	Scientists	95	77	81.05
2.	TO/TA*	80	64	80
3.	RA/SRF/JRF/PA*	50	45	90
	Total	225	186	82.67

* RA=Research Associates, SRF=Senior Research Fellow, JRF= Junior Research Fellow,

PA= Project Assistant, TO= Technical Officer, TA= Technical Assistant.

(Table-1: Analysis by Designation)



Graph-1: Analysis by Designation

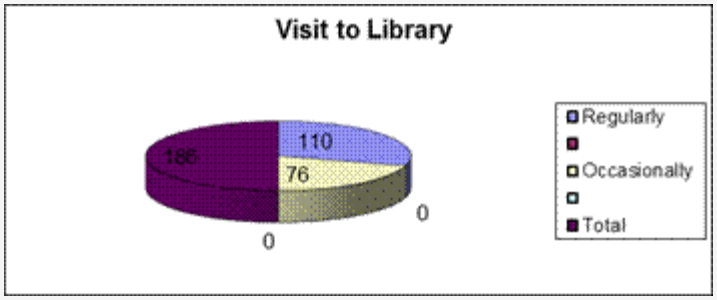
Analysis by Visit to Library

Analysis of visit to the library under study has been shown in Table 2 and Graph 2 which reveals that, out of 186 visitors, the highest number of 110 users visit the KRC regularly which comes to 59.14% followed by the 76 numbers of users who visit the KRC occasionally which constitute 40.86%. This signifies the efficiency of the KRC, which provides the required information and other reading materials. From the above result of analysis it can be concluded that most of the Scientists and other scientific personals are found to visiting in KRC regularly. Some of the users are interested only to use library occasionally during leisure time. This situation has arises due to their limited time, lack of sufficient current literature. Frequency of KRC used by users is high due to location of current and back volume of periodicals centrally and provision of up to date information through INTERNET.

Types of Uses	Total no. of Users	Percentage
	110	59.14%

Occasionally	76	40.86%
Total	186	100%

(Table 2: Analysis by Visit to Library)



Graph-2: Analysis by Visit to Library.

Purpose of Visit to the Library

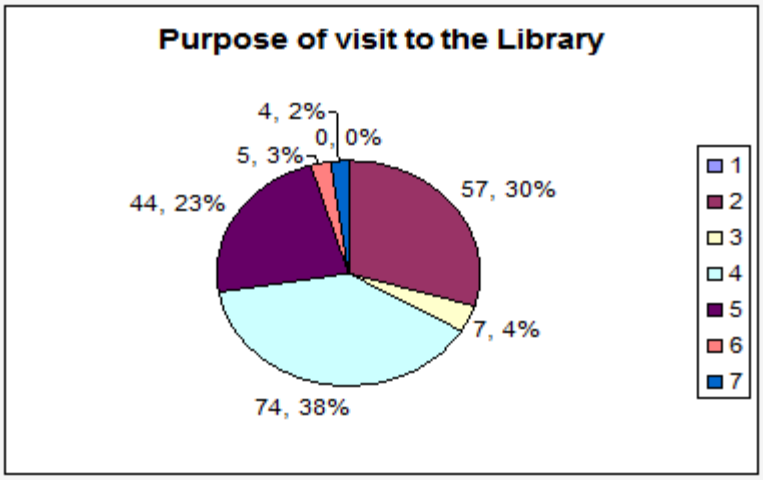
Purpose of information need or use is another aspect of library visit by the users. Analysis of the Table 3 and Graph 3 shows the purpose of library visit by the users. Users are generally visit the library to access information for writing an article/paper, writing a book, to update knowledge, starting a project, to browse internet, etc. The analysis of the table reflects that scientists come to the KRC for seeking information mainly to update their knowledge (74) followed by writing an article/paper, starting a project, writing a book, to browse internet and others which consists total of 191 (51.62%). Table shows that TO/TA access information mainly to update knowledge (60) followed by writing an article/paper, to browse internet, starting a project, writing a book and others comes to the total of 105 (28.38%) and RA/SRF/JRF and PA mostly like to search information to update knowledge (37) followed by writing an article/paper, writing a book, to browse internet and writing a book and the total is 74 (20%). From the analysis, it is seen that the scientists seek more information as compared to TO/TA and RA/SRF/JRF/PA for satisfying their varying information needs. The analysis also reflects the users mainly used KRC to update their knowledge which constitute total of 171 (46.21%) followed by writing an article/paper (26.22%), starting a project (15.68%), to browse internet (7.03%), writing a book (3.24%) and others constitute lowest in the rank (1.62%).

Designation	Writing An article/Paper	Writing a book	To Update Knowledge	Starting A Project	To Browse Internet	Others	Total	%
Scientists	57	7	74	44	5	4	191	51.62
TO/TA*	22	3	60	7	11	2	105	28.38
RA/ SRF/ JRF/PA*	18	2	37	7	10	0	74	20
Total	97	12	171	58	26	6	370	100
%	26.22	3.24	46.21	15.68	7.03	1.62	100	-

*RA=Research Associates, SRF=Senior Research Fellow, JRF= Junior Research Fellow,

PA= Project Assistant, TO= Technical Officer, TA= Technical Assistant.

(Table 3: Purpose of visit to the Library)



Graph-3: Purpose of Visit to the Library.

Frequency of Library Visit

While making an analysis of frequency of the users to the library under study placed below in tables listed below the scholar has consult with the library professionals of the KRC and also studying the attendance register of the three sections namely Journal section, book section and internet section. On the basis of the data collected from the attendance registers of the concerned sections of KRC, the following tables have been prepared. KRC is a loan institution in North Eastern region with large collection of books. Therefore the students and teaching community of technical colleges and universities of entire regions frequently visit the libraries for gathering of information and more specifically to update their knowledge in their respective fields. The scholars and scientists of the institute like engineering colleges of the region make the best use of the KRC for their project work and apprentice training at NEIST for a short duration. These people extensively use the library facilities which are reflected in the following tables.

User Statistics of Journal Section (Monthly) of KRC

Table 4 shows the monthly statistics of Users in Journal section of KRC, NEIST from 4th August 2005 to 10th July 2008.From the table is seen that the highest number of users has visited the KRC during the 2006 as compared to the years 2007, 2008 and 2005. It reflects that the numbers of users in the library are highest in the year 2006. From the analysis it is also found that in December and October 2007, very less number of users was visit the KRC reason being that it is closed due to a number of holidays during the period.

Year	Month	Number of users (Monthly)	% of Library Use (Monthly)
2005 (From 4.08.05)	August	236	39.53
	September	202	33.84
	October	123	20.6
	November	122	20.44

	December	150	25.13
	Total	597	100.00
2006	January	161	7.97
	February	160	7.92
	March	172	8.52
	Apr	134	6.64
	May	215	10.65
	June	185	9.16
	July	161	7.97
	August	238	11.79
	September	150	7.43
	October	132	6.54
	November	131	6.49
	December	180	8.92
	Total	2019	100.00
2007	January	106	7.51
	February	108	7.65
	March	104	7.37
	Apr	95	6.73
	May	111	7.86
	June	168	11.9
	July	147	10.41

	August	188	13.31
	September	117	8.29
	October	75	5.31
	November	120	8.5
	December	73	5.17
	Total	1412	100.01
2008 (up to 10.7.08)	January	100	13.61
	February	100	13.61
	March	111	15.1
	April	106	14.42
	May	158	21.5
	June	195	26.53
	July	65	8.84
	Total	735	113.61

Source: Users Attendance Register of Journal section in KRC (NEIST), Jorhat.

(Table 4: Users Statistics (per month) Journal Section in KRC of NEIST)

User Statistics for Outsiders and Trainee's in Book Section of KRC (Monthly)

The KRC, NEIST is offered membership to outsiders for utilizing some facility of Library on payment basis. The Director of NEIST has been produce fee-based membership facility to the outsider individuals/institutions. The institution also provides free membership for its trainees. Table 5 shows the monthly user statistics for outsiders and trainee's in book section of KRC, NEIST from June 2005 to 7th July 2008.From the table is seen that the highest number of users has visited the KRC during the 2006 as compared to the years 2007, 2008 and 2005. It reflects that the number of library use was at the peak in the year 2006. From the analysis it is also found that in October 2005, very less number of users was visited the KRC due to closure of the KRC for maximum number of holidays.

Year	Month	Number of Visitors (Monthly)	Percent of use monthly
2005 (from June)	June	18	18.55

	July	19	19.58
	August	23	23.71
	September	5	5.15
	October	1	1.03
	November	16	16.49
	December	15	15.46
	Total	97	99.97
2006	January	6	0.97
	February	3	0.49
	March	18	2.91
	April	7	1.13
	May	7	1.13
	June	29	4.69
	July	14	2.27
	August	229	36.06
	September	285	46.12
	October	12	1.94
	November	2	0.32
	December	6	0.97
	Total	618	99.00
2007	January	7	2.65
	February	28	10.61

	March	5	1.89
	Apr	5	1.89
	May	3	1.14
	June	21	7.95
	July	7	2.65
	August	6	2.27
	September	4	1.52
	October	68	2.58
	November	102	38.64
	December	8	3.03
	Total	264	76.82
2008 (up to 10.07.08)	January	17	10.12
	February	10	16.8
	Mar	1	0.6
	April	10	16.8
	May	12	7.14
	June	105	62.5
	July	13	7.74
	Total	168	121.70

(Source: Attendance Register for outsider and Trainee's in Book Section of KRC of NEIST.)

(Table 5: User Statistics (per month) for Outsider and Trainees in Book Section of KRC)

User Statistics (per month) for Permanent Users in Book Section of KRC

The Table 6 shows the monthly statistics for Outsiders and trainees in Book section of KRC, th th

NEIST from 17 June 2004 to 7 July 2008.From the table it is seen that, the highest number of Permanent users has visited to the book section of KRC during the 2005 as compared to the years 2006, 2007, 2005 and 2005 respectively. It is also revealed that maximum number of users fall in the year 2005. But it is surprising to know that during the March 2007 the numbers of users coming to the library are 17 which is very less reason being due to a good number of holidays which compel the KRC to close.

Year	Month	Number of Visitors (Monthly)	Percentage of use (Monthly)
2004(from 17.06.04	June	29	6.9
	July	91	21.67
	August	67	15.95
	Sept	72	17.14
	Oct	50	11.9
	Nov	35	8.33
	Dec	76	18.09
	Total	420	99.98
2005	Jan	51	4.24
	Feb	102	8.48
	Mar	115	9.57
	Apr	72	5.99
	May	109	9.07
	June	142	11.81
	July	179	14.89
	August	160	13.31
	Sept	102	8.48
	Oct	48	3.99

	Nov	36	3
	Dec	86	7.15
	Total	1202	99.98
2006	Jan	47	7.1
	Feb	34	5.14
	Mar	43	6.5
	Apr	30	4.53
	May	112	16.92
	June	60	9.06
	July	37	5.59
	August	96	14.5
	Sept	60	9.06
	Oct	42	6.34
	Nov	55	8.31
	Dec	46	6.95
	Total	662	100.00
2007	Jan	24	5.41
	Feb	53	11.94
	Mar	17	3.82
	Apr	36	8.1
	May	43	9.68
	June	27	6.08

	July	52	11.71
	August	50	11.26
	Sept	21	4.73
	Oct	25	5.63
	Nov	64	14.41
	Dec	32	7.21
	Total	444	99.98
2008 (7.7.08)	Jan	108	28.05
	Feb	95	24.68
	Mar	28	7.27
	Apr	27	7.01
	May	50	12.99
	June	44	11.43
	July	33	8.57
	Total	385	100.00

(Source: Attendance Register for readers of Book section in KRC of NEIST)

(Table 6: Users Statistics (per month) for Permanent Users in Book Section of KRC of NEIST)

User Statistics for Internet Section in KRC of NEIST

The Table 7 shows the monthly statistics of Users in Internet section of KRC, NEIST from 4 August 2004 to July 2008.From the table it is clear that the highest number of users have visited the internet section of KRC during the 2006 as compared to the years 2005, 2007, 2008, and 2004 respectively. Hence, it can be revealed that the number of internet use were maximum in the year 2006. From the analysis it is also found that in October 2004, June 2005 and October 2007, no users visited the internet section of the KRC due to the reason that during the period maximum no. of holidays fall.

Year	Month	No. of visitors (Monthly)	%of Internet use in KRC
2004(From August)	August	1	0.91

	Sept	5	4.54
	Oct	0	0
	Nov	17	15.45
	Dec	87	79.09
	Total	110	99.99
2005	Jan	87	8.04
	Feb	183	16.91
	Mar	133	12.29
	Apr	112	10.35
	May	81	7.48
	June	0	0
	July	48	4.44
	August	120	11.09
	Sept	135	12.48
	Oct	73	6.75
	Nov	70	6.65
	Dec	40	3.7
	Total	1082	100.18
2006	Jan	66	5.44
	Feb	71	5.85
	Mar	91	7.49
	Apr	64	5.27

	May	76	6.26
	June	101	8.32
	July	113	9.31
	August	196	16.14
	Sept	158	13.01
	Oct	115	9.47
	Nov	99	8.15
	Dec	64	5.27
	Total	1214	99.98
2007	Jan	100	15.43
	Feb	119	18.36
	Mar	17	2.62
	Apr	39	6.02
	May	108	16.67
	June	113	17.44
	July	82	12.65
	August	19	2.93
	Sept	7	1.08
	Oct	20	3.09
	Nov	24	3.7
	Dec	0	0
	Total	648	99.99
2008 (up to July)	Jan	34	10.27

	Feb	67	20.24
	Mar	53	16.01
	Apr	61	18.43
	May	55	16.62
	June	51	15.41
	July	10	33.1
	Total	331	130.08

(Source: Register on use of Computer for searching Internet at KRC of NEIST)

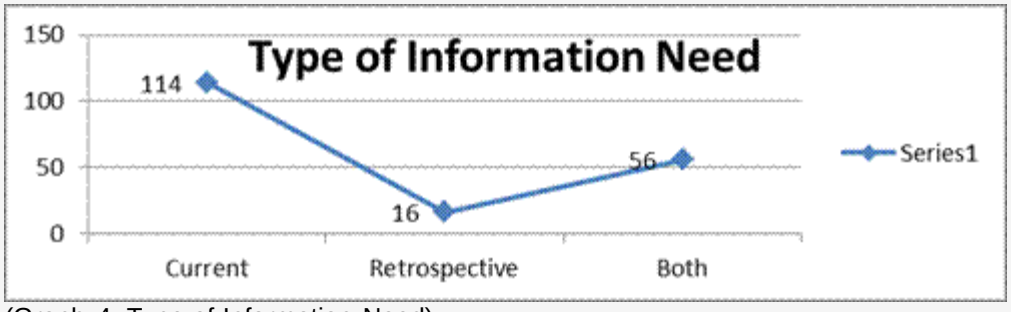
(Table 7 Users statistics of Internet Section in KRC of NEIST.)

Types of Information Needs

Analysis to the type of information needs of the scientists placed in Table 8 supplemented with Graph 4 depicts that, while 114 scientists uses current information forming thereby, 61.29%, 16 number of scientist need retrospective information forming 8.6% and 56 number require both current and retrospective information forming thereby, 30.11%.

Sl. No.	Information Need	Number	Percentage
1.	Current	114	61.29
2.	Retrospective	16	8.6
3.	Both	56	30.11
	Total	186	100

(Table 8: Types of Information Need.)



(Graph-4: Type of Information Need)

Types of Document Use

Providing altogether 14 numbers of different types of information sources in the questionnaire, the scientists were asked for multiple choice of their extensively and sufficiently preferred type of documents and the same has been placed in Table 9 along with Graph 9 for clear understanding. It is revealed from the analysis that the scientists extensively use Periodicals (65) as compared to other documents. The scientist uses highest numbers of 536 documents of different kinds, which constitute 53.28%, followed by TO/TA constitute 266 (26.44%) and RA/SRF/JRF/PA constitute lowest number 204 (20.28%) out of total number of 1006 different types of documents that are analyzed from the received questionnaires. From the analysis it is also reflected that users altogether uses 132 numbers of textbooks, which includes scientists (58), TO/TA (41) and lowest is by RA/SRF/JRF/PA (33). Users including scientists use 65 numbers, TO/TA use 38 and RA/SRF/JRF/PA using 20 periodicals in KRC constitute total number of 123 periodicals. The highest numbers of 135 References are used by the KRC users including scientists (64), TO/TA (41) and Ra/SRF/JRF/PA uses 30 numbers of references. The users also extensively use Reviews (114) and Abstracts (112). From the table it is seen that the frequency of use of Conference/Seminar proceedings (57), Theses and dissertations (54), Patents (53), Research Reports (52) and Newsletters (51) are minimum as compared to references, text books, periodicals, reviews and abstracts. The table shows that frequency of use of Standards, Indexes, Bibliographies and Micrographics by the users is not noticeable.

From the analysis it is deduced that most of the users are concerned with reference sources, text books, periodicals, reviews, conference/seminar proceedings, theses/dissertations, patent, research report and newsletters, etc. The rate is very high among scientists as compared to TO/TA and RA/SRF/JRF and PA.

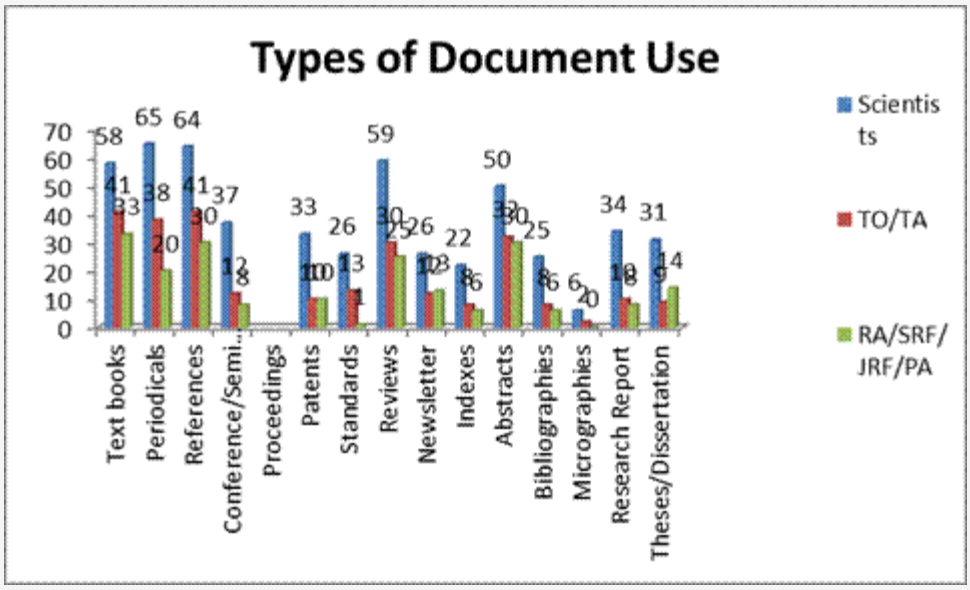
Types of Documents	Scientists	TO/TA	RA/SRF/JRF/PA	Total	Percentage
Text books	58	41	33	132	13.12
Periodicals	65	38	20	123	12.23
References	64	41	30	135	13.42
Conference/Seminar/Proceedings	37	12	8	57	5.67
Patents	33	10	10	53	5.27
Standards	26	13	1	40	3.98
Reviews	59	30	25	114	11.33
Newsletter	26	12	13	51	5.07
Indexes	22	8	6	36	3.58
Abstracts	50	32	30	112	11.13
Bibliographies	25	8	6	39	3.88
Micrographies	6	2	0	8	0.8

Research Report	34	10	8	52	5.17
Theses/Dissertation	31	9	14	54	5.37
Total	536	266	204	1006	100
Percentage	53.28	26.44	20.28	100	

*RA=Research Associates, SRF=Senior Research Fellow, JRF= Junior Research Fellow,

PA= Project Assistant, TO=Technical Officer, TA=Technical Assistant.

(Table 9: Types of Document Use)



Graph-5: Types of Document Use.

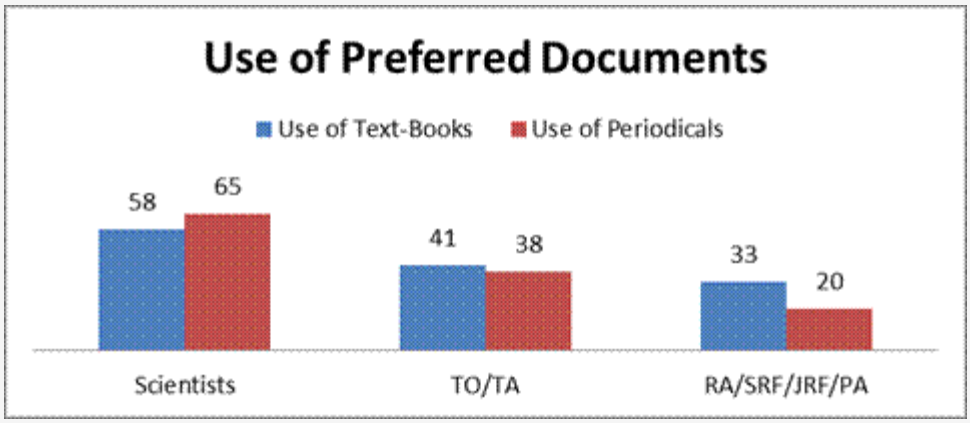
Use of Preferred Documents

Data given in the Table 10 supplemented with Graph 6 shows that the number and corresponding percentage of the users using textbooks and periodicals respectively. Analysis reveals that, out of a total respondent of 132 for the variable, while 58 number of scientists (43.94%) prefer to use text-books, 65 number of scientists out of a total respondents of 123 prefer to use periodicals which comes to 52.85% followed by 41 number of TO/TA (31.06%) for text books and 38 number use periodicals (30.89%) respectively. Like wise, while 33 number of RA/SRF/JRF/PA prefer to use text books, 20 number of RA/SRF/JRF/PA prefer to use periodicals as a source of information which forms 16.26%. This shows that, the scientists prefer periodicals as their preferred documents while, TO/TA and RA/SRF/JRF/PA use text books as their favored documents.

User Category	Use of Text-Books	%	Use of Periodicals	%
Scientists	58	43.94	65	52.85
TO/TA	41	31.06	38	30.89

RA/SRF/JRF/PA	33	25	20	16.26
Total	132	100	123	100

Table 10: Use of Preferred Documents



Graph-6: Use of Preferred Documents

Access to Internet

Internet is a viable platform for searching information for accelerating research activities. The scholars explored the library users through questionnaire to know the access of internet by the user communities which has been placed in Table 11, where it could be revealed that, 180 users (96.77%) out of 186 access internet for their study/research purpose while, 6 users (3.23%) do not prefer to use internet as information source. The primary reason for using Internet is that the scientists significantly depend on communication with the fellow scientists and also search frequently current information in their concerned field to keep up to date their knowledge. This helps scientists in their further study, starting a new project, inventions and innovations. Internet is the only way for keeping up to date information and because of that the science and technology people more frequently access Internet.

Access internet	Number	Percentage
Yes	180	96.77
No	6	3.23
Total	186	100

Table 11: Access to Internet

Internet Access by Types of Resources

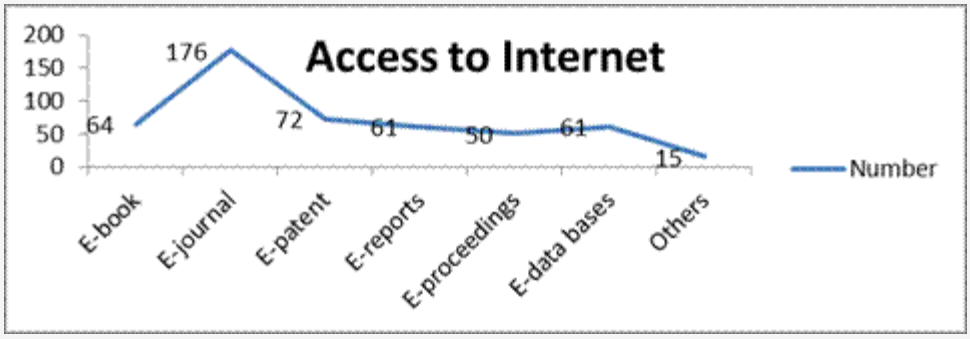
Internet is a global information infrastructure, which enables the scientists to access the information through the medium like text, voice, and graphics in other words multimedia. The electronic sources of information are extensively available on Internet, which includes e-journals, e-books, e-reports, databases etc. E-Resources are those electronic products that deliver a collection of data, be in text referring full-text basis, e-journals, image collection, and other multimedia products and numerical, graphical or time based as a commercially available till that has been published with an aim to being marketed. Data relating to the reasons for internet access in general were obtained through the questionnaire and the

same has been placed with the Table 12 along with Graph 7. Analysis shows that the users of KRC mainly search internet for accessing to electronic source of information to promote their learning, research and development. While making a categorization of e-resources, out of 499, 176 number of scientists and others prefer to access e-journals which constitute 35.27% followed by access to e-patent (14.43%) by 72 nos, e-books (12.83%) by 64 nos, e-reports (12.22%) and databases (12.22%) each by 61 nos, e-proceedings (10.02%) by 50 nos and others (3.01%) which includes e-standards, electronic theses and dissertations by 15 nos respectively.

Sl. No.	Internet Access	Number	Percentage
1.	E-book	64	12.83
2.	E-journal	176	35.27
3.	E-patent	72	14.43
4.	E-reports	61	12.22
5.	E-proceedings	50	10.02
6.	E-data bases	61	12.22
7.	Others*	15	3.01
	Total	499	100

*Others = E-standards, E-Thesis and E-Dissertation, etc.

Table 12: Access to Internet



Graph-7: Internet Access

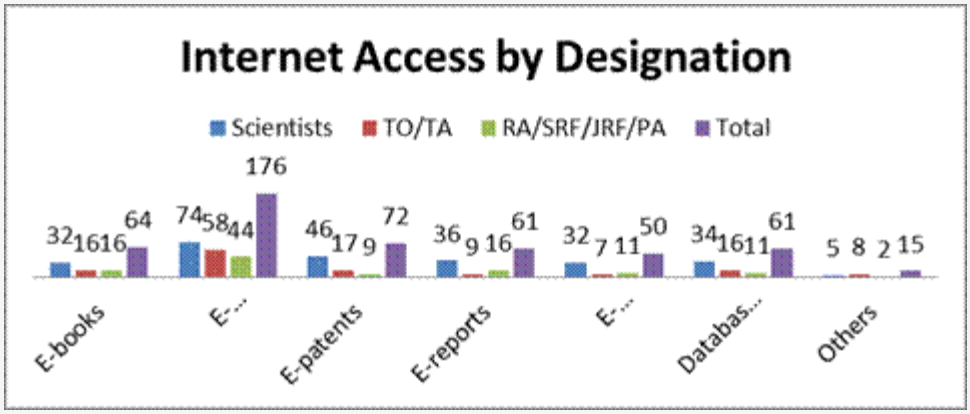
Internet Access by Designation

The scientists, TO/TA, RA/SRF/JRF and PA of NEIST are the identified categories, which use principally KRC for accessing to different types of information sources. The categories of information resources has been broadly grouped under the following 6 headings as reflected in the table. Among the resources available in KRC, e-resources are found to be used by highest numbers of users of the NEIST. The related variable has been placed with Table 13 supported with Graph 8 which shows the use of different types of e-resources. Analysis

reveals that e-journals are being used maximum constituting 35.27% followed by e-patents (14.43%), e-books (12.83%), e-reports and databases (12.22% each), e-proceedings (10.02%) respectively.

Internet Access	Scientists	TO/TA	RA/SRF/JRF/PA*	Total	%
E-books	32	16	16	64	12.83
E-journals	74	58	44	176	35.27
E-patents	46	17	9	72	14.43
E-reports	36	9	16	61	12.22
E-proceedings	32	7	11	50	10.02
Databases	34	16	11	61	12.22
Others	5	8	2	15	3.01
Total	259	131	109	499	100
Percentage	51.9	26.25	21.84	100	

Table 13: Internet Access by Designation



Graph-8: Internet Access by Designation.

Satisfaction with regard to the Library Services

Satisfaction is one of the important criteria among the use of the library, which basically depend upon the materials that the library possess and imparts service. Analysis to the variable placed in Table 14 reveals that, 170 (91.4%) of users comprising the scientists and others out of 186 are satisfied while 16 (8.6%) number of users are not satisfied. This may be the due to the fact that, the library is situated in the campus and the users are not able to take maximum use of the library materials and services.

Satisfaction	Number	Percentage

Yes	170	91.4
No	16	8.6
Total	186	100

Table 14: Satisfaction with regard to the library services

Rate of Satisfaction

The rate of satisfaction is another important variable in the given area of study 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. The concerned variable has been placed here with under Table 15 supplemented with Graph 9 for clear understanding. Analysis discloses that, 113 users out of 186 respondents have placed their satisfaction rate as good constituting thereby, 60.75% followed by the verdict of 65 users as excellent (34.95%) and 7 users as moderate (3.76%) respectively. Analysis further reflects that only one user placed no comment option which forms 0.54%. Overall it can be opined that, the major chunk of users are satisfied by the KRC services.

Sl.No.	Satisfaction Rate	Number	Percentage
1.	Excellent	65	34.95
2.	Good	113	60.75
3.	Moderate	7	3.76
4.	No comment	1	0.54
	Total	186	100

Table 15: Rate of Satisfaction

Graph-9: Rate of Satisfaction.

Library Automation

Automation means the use of automatic equipments and machines such as computer and other devices in the libraries. In the process of automation, it should be kept in mind that the

‘change’ is the only constant and the users are ready to accept and adapt to the changing technologies applied through the hardware, software and other technological devices which has become indispensable to keep the library alive in the present setup environment. Libraries need computers, application and trained people to run any modern library systematically. Computer based automated facilities are now the most effective system and necessity. Out of 186 respondents, 114 users comprising the scientists and others are of the opinion that the library at KRC is not fully automated while, 72 respondents (38.71%) opined that their library is automated. It seems from the analysis that, KRC library is not fully automated.

Library Automation	Number	Percentage
Yes	72	38.71
No	114	61.29
Total	186	100

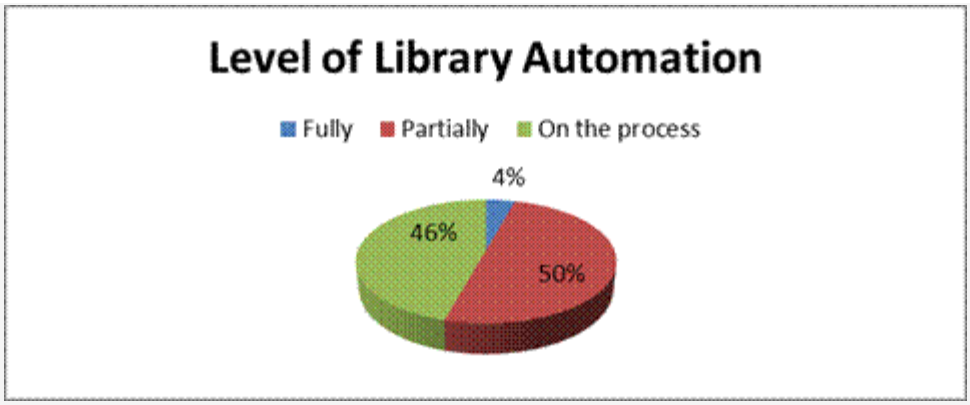
Table 16: Library Automation.

Level of Library Automation

Level of library automation is another variable in the study and the relevant data has been shown in Table 17 complemented with Graph 10. While making an analysis of the same, it could be revealed that, highest number of 93 (50%) users said that their library is partially automated while, 85 (45.7%) users opined that the automation work at KRC is on the process and 8 (4.3%) users viewed that the library is fully automated. It could be deduced from the analysis that the KRC is not fully automated. The automation work of KRC is still on the process barring few services such as, serial control, cataloging of back volume etc. are automated.

Sl. No.	Level of library automation	Number	Percentage
1.	Fully	8	4.3
2.	Partially	93	50
3.	On the process	85	45.7
	Total	186	100

Table 17: Level of Library Automation



Graph-10: Level of Library Automation

Conclusion

Careful analysis of the data revealed that, the KRC, NEIST is adequately equipped to provide incentive and value added services to the scientists and others with the present collection development. Due to unavailability of a departmental library, the scientists and other users primarily depend upon the resources of KRC to promote their learning, research, and development. The library, however, is equipped with e-resources which have become the primary sources of information for the users of the library under study. The scientists prefer to use the information available through electronic form rather than traditional way. Therefore, subject gateways and portals are required to be provided with to the scientists for better use of information. Further, most of the scientists and research scholars prefer to use current periodicals to keep them update in the knowledge of their interested field. KRC needs to be fully automated for providing value added information and services to the scientists which has become essential in present day context as the library has become a work house for the different R&D programmes in the science and technology institutes, and also due to the increasing demand for processing of data and retrieval of information in the easiest and quickest possible time. KRC is yet to come out with such facilities as the automation work is still in progress.

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