An Analysis of the Use of Information by the Scientists of CSIR Institutes of Northeast and Eastern India

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ABSTRACT

Information need is the most important requirements of the users for any research activities andit can be fulfilled only by Library. In science and technology institutes, scientists and research scholars are very much engaged in research and development activities and to conduct research they need relevant information in their related fields. The present study mainly focuses on to analyses information need and use pattern by the scientists of selected seven CSIR institutes of Northeast and Eastern India. The study mainly focuses on to identify the rate of KRC visit, time devoted to use the library, purpose of library visit, types of information need, rate of access of internet, reasons for accessing internet and type of document search by the users.

KEYWORDS: Use, Information, Scientists, CSIR Institutes, Northeast & Eastern India.

1. INTRODUCTION

The field of information needs and uses is broadly defined as that which is concerned with information seeking, determining users' needs for information, and information use. The need for information is a factual situation in which, there exists an inseparable interconnection with 'information' and 'need'. If an individual is in need of information for realizing specific tasks, then the need for information is an objective information need, that is, qualitatively, and quantitatively determined information needed by an individual for solving an objectively assigned task. The scientific institutions like CSIR institutes are engaged in R & D activities for that they need information which are applicable to their research. CSIR institutes of Northeast and Eastern Indian are not exception of that. The scientists of six CSIR institutes of Eastern India and one institute of Northeast are very much engaged in research and development activities. It is very much important to identify their information need and use pattern so that KRC will provide themuseful information resources for their research work.

The analysis of the study consists of questions both close and open ended. The data that have been analyzed in this study were collected from the scientists and research scholars during the survey.

2. OBJECTIVES OF THE STUDY

The followings are the objectives of the present study.

➢ To determine the information, need and use of the scientists of CSIR institutes of Northeast and Eastern India.

➢ To identify the frequency of KRC visit and time devoted to use of KRC.

➢ To evaluate purpose of KRC visit.

➢ To identify, type of information needs and types of documents search.

➢ To find out the reasons for accessing internet.

3. REVIEW OF LITERATURE

The information needs of scientists are related to the R & D work undertaken in their field of research. With the emerging needs and increased fascination of scientific groups for handling and use of electronic information resources, the information centers and libraries to cope with the changing information needs of the users. Various studies have emerged on the information needs, information seeking behaviour and information use pattern of the scientists. The scholars have made an extensive survey of literature available in the concerned field so as to get abreast with the information. In the present study, a number of literatures published in India and abroad in the areas of information need, information use pattern and information seeking behaviour have been reviewed in chronological order.

Jamali & Nicholas (2010) have evaluated the information- seeking behaviour of scientists from different subfields of physics and astronomy by adopting and interdisciplinary perspectives. It has investigated the effect of interdisciplinary and scatter of literature on two aspects of the information seeking behaviour: methods used for keeping the users up-to-date and for identifying different resources. The sample of the survey was limited to 114 Ph.D. students and academic staff at the Department of Physics and Astronomy of University College, London. The study has revealed that interdisciplinary differences among physicists and astronomers in terms of their information-seeking behaviour and highlights the risk of overlooking the characteristics of information-seeking behaviour of specialized subject communities by focusing on very broad subjects.

Sahu & Singh (2013) has carried out a study on information seeking behaviour of scientists of astronomy and astrophysics. The purpose of the study was to examined different aspects of information seeking behaviour of Indian astronomy/astrophysics scientists. The study justifies a significance relationship between user's uses of e-resources and user's age wise group which shows 0.190 level of significance. The study reveals that 46.5 percent respondents were searching information to fulfill their basic research and teaching activities and 46.2 percent were searching information for their basic research. The study concludes that astronomy/ astrophysics academics have used astrophysics data system for education and research.

Another study has been carried out by Umesha & Chandrashekara (2013) to evaluate the libraries in relation to health sciences or dental sciences activities. The study has illustrated that their task was not limited to collecting or licensing the information resources, but they have various task to match the needs like curriculum-based learning, research and point of care. The study fathoms to find out the information seeking and searching behaviour of dental science professional of Karnataka. The study reveals that 97.4% of respondents were accessing internet of which 97.9% were PG students and 97.2% were teaching faculty. The 67.9% teaching faculties were accessing e- journals from RGUHS consortium followed by 56% PG students. The study also has found that 71.6% respondents preferred formal training or orientation on Internet literacy and use of e-resources. The study has recommended that there is a need of well-planned internet literacy programme and preparation of subject gateways to meet the demand of the dental professionals.

A conceptual analysis of emotions and feelings for information seeking draws on the appraisal theories has been carried out by Savolainen (2014). Savolainen has demonstrated that the emotions and feelings can substantially encourage or discourage an individual's attempts to seek information. The author has elaborated the picture of the motivational role of the affective factors and the study has recommended that emotions motivate persons by triggering action readiness to approach or avoid information sources. Qasim & Khan (2015) in another study analyzes the use of e-journals by the scientists working at CSIR-Institute of Genomics and Integrative Biology (CSIR-IGIB), Delhi. When enquiring about the frequency of use of e- resources it has been found that 100 percent of the IGIB scientist were actively engaged in using e-journals and out of which 75% users were accessing e-journals to update their knowledge. The study also examined that majority of 100% users have reported no difficulty while using e- journals and 90.9% users were fully with the facilities provided by the institute for accessing e- journals. The study has found that the scientists were mostly preferred e-journals which are provided by the CSIR-NISCAIR consortia, NKRC. Majority of the scientists have accessed e- journals from their department for both research purposes as well as to update their individual knowledge. The study recommended providing training to the scientist on how to use and access e-resources from online databases.

A similar type of study on Information use pattern by the students of NIT, Jalandhar has been analyzed by Chohda & Gupta (2017) on the basis of the data retrieved during survey. The Study found that 70 percent students were aware about the e-journals and databases. The fact was revealed that the influence of procuring effective and useful resources has satisfied the library users. It is evident that 27.78% students indicated that the needed e-journals were not able to accessed. Further 24.45% student preferred no problem encountered, 3.33% respondents found that it is difficult to read e-journals. The study elucidates both print and electronic resources are preferred by the students. Balakrishnan & Jeyshankar (2019) has carried out a study to investigate information use pattern by Graduate Library users of Chennai city. The study finds out 60% of the graduate library users are using the library regularly. The 68% graduate users are aware about searching OPAC. Most of the users are aware about different information sources like newspapers, periodicals and reference books. The study suggested increasing use of electronic resources by the graduate users.

A comparative study of two groups of law course in two universities of Sri Lanka has been conducted by Wijetunge & Alahakoon (2019) to find out the information seeking trends among the entrants. The study

mainly focuses on use of the school library, use of library facilities, use of catalogue, computers in the library, borrowing books, use reading room facilities etc. The study also concentrated on the use of smart phones, social media, E-mail, SMS services to communicate with the library by the entrants. It has been observed that prior knowledge and skills in the use of library during the school period benefits the users. New entrance needs the background of sound academic support from the university library to adept their information skills. The school library needs academic activity of the users and their experience in operating computers to search the relevant information. The use of social media can affect the information seeking process once they the university. It was found that the undergraduates from both groups have used the school library facilities but the use of computer was scanty. Further, those who enter the law stream were benefited by the university library for the academic purpose.

Further, Soni *et al.* (2020) have conducted an analytical study on usage of E-resources and INMAS Library services based on the user's perspective. The main objective of this study was to find out the user's awareness, usage pattern of e-resources and problems faced by the scientists of INMAS while browsing and searching library documents. The scope of study was confined to the users of INMAS, DRDO, Delhi. The study indicated that 88.24 % scientists and service officers were well aware of journals subscribed in their respective subject area. In INMAS, 100 percent of scientists were accessing e-journals and 90.20% scientists were referring e-journals for keeping themselves up-to-date. The study has recommended that library should introduce innovative strategies and increase the frequency of orientation programs to enhance awareness about available library resources among the users.

The studies mentioned above have taken the diverse opinion from the scholars in different fields and have established the fact that use of information became the part and parcel of modern education system. There are several studies have been conducted by various research scholars in the field of information use pattern by the scientists and other categories of users. But there seems to be more research gap between the previous and the present study. The earlier studies were mainly conducted on information use pattern of scientists in the field of astronomy, physics, astrophysics and other categories of users. But few studies have been conducted to study the information use pattern of CSIR scientists. Qasim & Khan in 2015 has conducted a study on use of e-journals by the scientists of CSIR-IGIB and it was confined only to CSIR-IGIB and use of e-journals. The present study is not limited to one laboratory. It is confined to seven CSIR laboratories of two regions i.e., Northeast and Eastern India. The study entirely emphasized on frequency and purpose of KRC visit; time devoted by the scientists for using library; types of information need of the users; types of documents search; reasons of accessing internet by the users; and reasons for internet search, etc.

4. RESEARCH METHODOLOGY

The study is based on the data collected from the scientists of seven CSIR institutes of Northeast and Eastern India. The name of the institutes is North East Institute of Science Technology (NEIST), Jorhat; Institute of Minerals and Materials Technology (IMMT), Bhubaneswar; Indian Institute of Chemical Biology (IICB); Central Glass and Ceramic Research Institute (CGCRI), Kolkata; Central Institute of Mineral and Fuel Research (CIMFR), Dhanbad; National Metallurgical Laboratory (NML), Jamshedpur and Central Mechanical

Engineering Research Institute, Durgapur. A structured questionnaire has been designed and distributedamong the scientists. The author has been applying appropriate statistical techniques for data analysis. Simple Random Sampling method has been applied for selection of sample to collect primary data for the study.

5. DATA ANALYSIS AND INTERPRETATION

**5.1 Responses Received from the Scientists/ Research Scholars**

The questionnaires have been distributed to the scientists and research scholars of the selected seven (7) CSIR laboratories of Northeast and Eastern India. The responses received and not received from the respondent are shown in the Table 1 and Figure 1 below.

Table 1: Institute Wise Responses Received from the Respondent (N= 288)

S. No.	Questionnaire	Number of Responses	Percentage
1	Received	288	82.29%
2	Not Received	62	17.17%
	Total Distributed	350	100

Source: Data retrieved during survey

From the table 1 and figure 1it has been reflected that total numbers of 350 questionnaires were distributed among the scientists and out of 350 questionnaires the researcherhas received 288 questionnaires. The response rate was 82.29% and 62 (17.71%) questionnaires have not received during survey. Here the number of respondents was N=288.
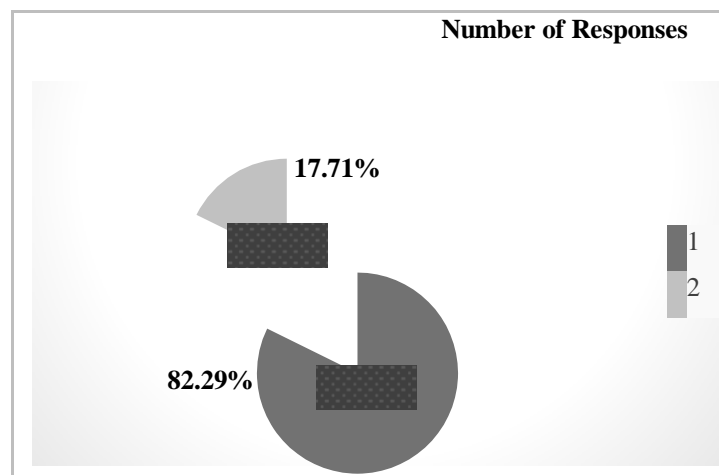
Figure 1 Responses Received from the Respondent

5.2 Institute wise Distribution of Questionnaires and Responses Received
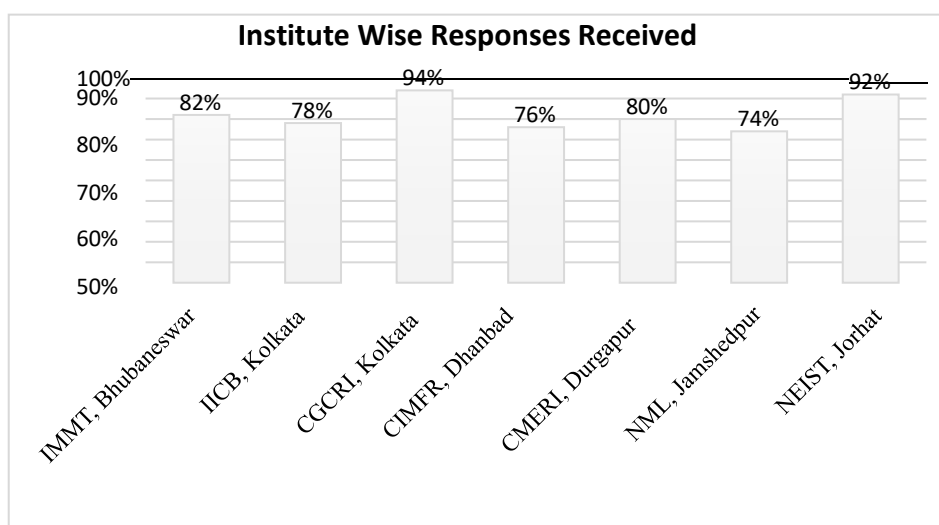
The table 2 and figure 2 shows the responses received from each CSIR institutes under study.

Table 2 Institute wise Distribution and Response Received (N= 288)

S. No.	Name of Institute	Questionnaire Distributed	Responses Received	Percentage %
1	IMMT, Bhubaneswar	50	41	82%
2	IICB, Kolkata	50	39	78%
3	CGCRI, Kolkata	50	47	94%
4	CIMFR, Dhanbad	50	38	76%
5	CMERI, Durgapur	50	40	80%
6	NML, Jamshedpur	50	37	74%
7	NEIST, Jorhat	50	46	92%
	Total	350	288	82.29%

Source: Data retrieved during survey

Figure 2: Institute Wise Responses Received

The table 2 shows that total number of 350 questionnaire have been distributed among the scientists of seven CSIR institutes and total of 50 questionnaires were distributed to the scientists of each individual institutes. The researcher has received total 288 filled up questionnaire. From the table 2 it is observed that researcher has received 94% response from the scientists of CGCRI, Kolkata, 92% responses received from the NEIST, Jorhat, 82% from IMMT, Bhubaneswar, 80% from CMERI, Durgapur, 78% from IICB, Kolkata, 76% responses received from CIMFR, Dhanbad and 74% responses received from the scientists of the NML, Jamshedpur. The figure 2 is the graphical representation of the table 2.
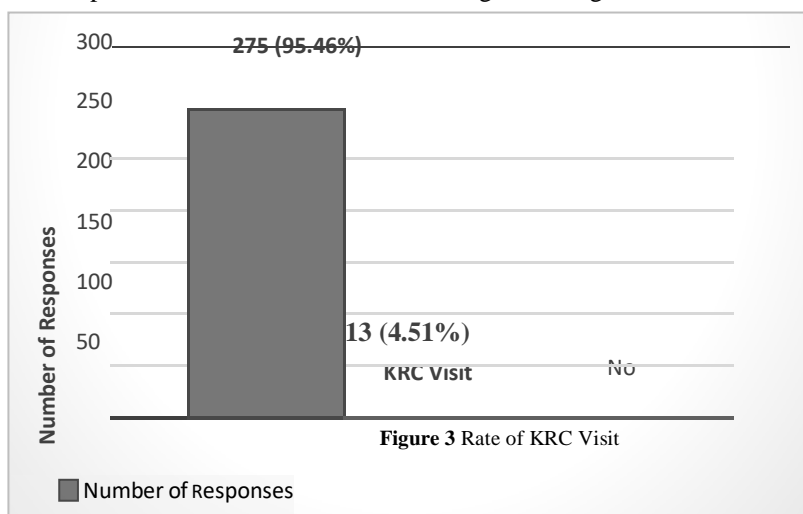
5.2.1 Rate of KRC visit

The table 3 identifies the number and percentage of Knowledge Resource Centre (KRC) visit by the scientists of the institutes under study.

Table 3: Rate of KRC Visit

S. No.	Library Visit	Number of Responses	Percentage (%)
1	Yes	275	95.49%
2	No	13	4.51%
	Total	288	100

Source: Data retrieved during survey

From the above table 3 it has come to the notice that the 275 (95.49%) users have visited the KRC. The study also reveals that only 13 (4.51%) number of the respondents have not visited the library. The figure 3 shows the graphical representation of the data computed in the table 3. Therefore, from the above study it was found that the majority of the respondent visited the KRCto increasing knowledge.

Figure 3 Rate of KRC Visit

### 5.2.1 Rate of frequency of KRC visit and Time given to use KRC

The table 4 and table 5 analyses the rate of frequency of KRC visit and time given to useKRC by the scientists of the selected institutes.

Tab**le 4**: Rate of Frequency of KRC visit

S. No.	KRC Visit	Frequency	Percentage (%)
1	Daily	45	15.63
2	Fortnightly	75	26.04
3	Once in a month	52	18.06
4	Sometimes	114	39.58
5	Not at all	2	0.69
	Total	288	100.00

Source: Data retrieved during survey

From the above table 4 it was found that 45 (15.63%) respondents have daily visited the library, 75 (26.04%) visited fortnightly, 52 (18.06%) once in a month, and 114 (39.58%) sometimes visited the library and only 2 (0.69%) of the respondents not at all visited the library. The figure 4 is the graphical representation of the same.
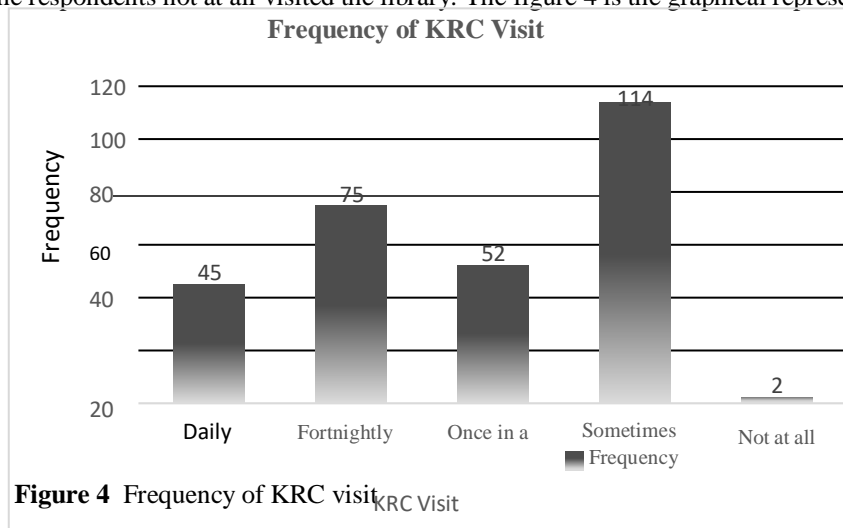


Figure 4 Frequency of KRC visit

The table 5 gives an overview of time spent by the scientists in the KRC. The study foundhighest number of 151 (52.43%) respondents have devoted their time for less than one hour dailyto the library, 126 (43.75%) devoted their time for 1- 5 hours, 11 (3.82%) respondents devoted they're for 6- 10 hours daily to the library. From the study it has been observed that scientists never get time to use the library for 11- 15 hours and over 15 hours daily. The graphical representation of the table 5 is shown in the figure 5.

Table 5: Time Spent in the KRC (N= 288)

S. No.	Time Devoted to theKRC	Frequency	Percentage (%)
1	Less than one hour	151	52.43
2	1-5 hours	126	43.75
3	6-10 hours	11	3.82
4	11-15 hours	0	0.00
5	Over 15 hours	0	0.00
	Total	288	100

Source: Data retrieved during survey

Figure 5 Time Devoted to the KRC
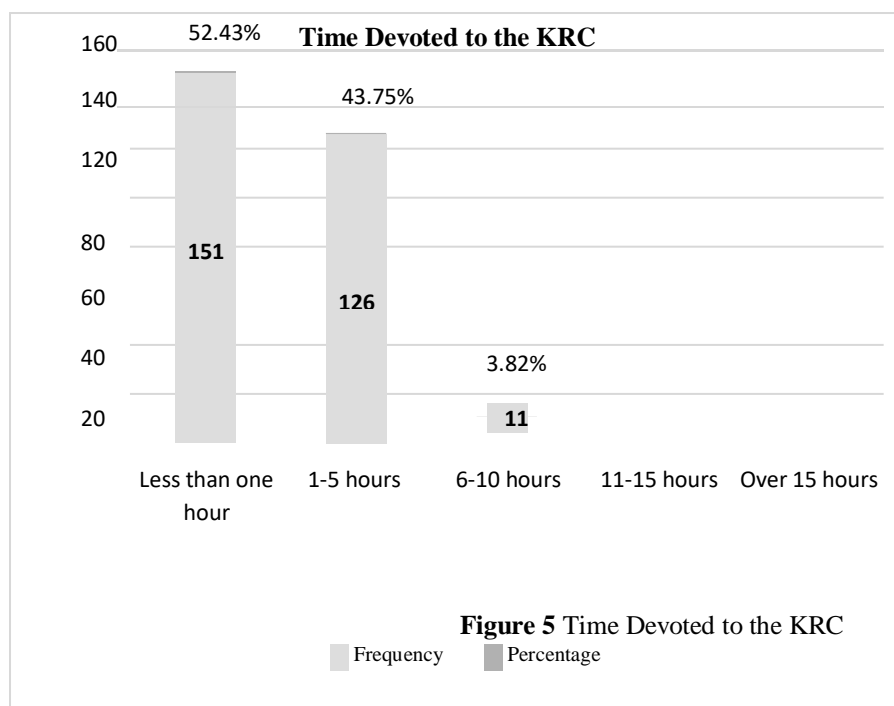
5.2.3 Purpose of KRC Visit

The following are the main purposes for which scientists preferred to visit KRC.
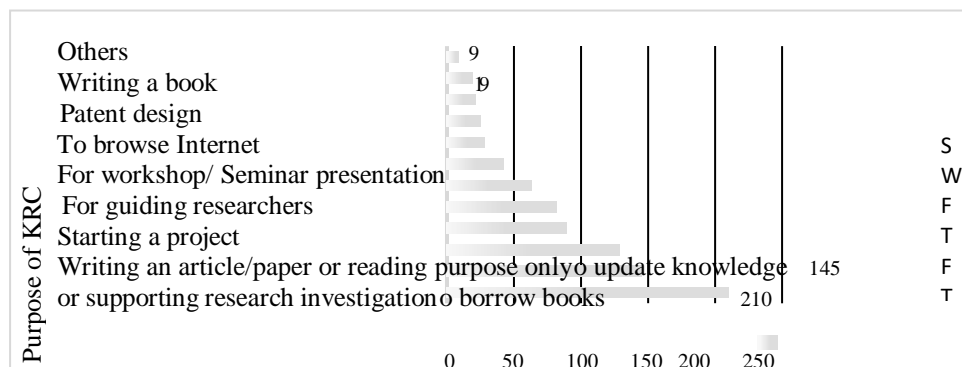
Table 6: Purpose of Visiting the KRC (N= 288)

Purpose of KRC Visit	Frequency	Percentage (%)	Rank
To borrow books	210	72.92	I
For supporting researchinvestigation	145	50.35	II
To update knowledge	129	44.79	III

For reading purpose only	89	30.90	IV
Writing an article/paper	82	38.42	V
Starting a project	63	21.88	VI
For guiding researchers	42	14.58	VII
For workshop/ Seminarpresentation	28	9.72	VIII
To browse Internet	25	8.68	IX
Patent design	21	7.29	X
Writing a book	19	6.60	XI
Others	9	3.13	XII

Source Data Retrieved during survey

Analysis of the above table 6 shows the purposes of KRC visit by the scientists. Scientists and research scholars are visiting the KRC mainly 'to borrow book' which received 210 (72.92%) responses, 145 (50.35%) of respondents have visited the KRC 'for supporting research investigation' ranked as two, 129 (44.79%) scientists were using the KRC 'to update knowledge' as rank three, 89 (30.90%) users came to the KRC 'for reading purpose' which was in rank four, 82 (28.42%) respondent were visited for 'writing an article/ paper' ranked as five, 63 (21.88%) scientists visited the library for 'starting a project' ranked as six. The rest of the 42 (14.58 %), 28 (9.72%), 25 (8.68%), 21 (7.29%), 19 (6.60%) and 9 (3.13%) scientists were using the KRC for the purpose of guiding researchers, workshop/ seminar presentation, patent design, to browse internet, writing a book and others which are ranked as seven, eight, nine, ten, eleven and twelve respectively. The figure 6 represents the graphical analysis of the above data.

Figure 6 Purpose of Visiting the KRC

Therefore, the majority of the respondent were visited KRC for the purpose to borrow books and very less respondents were visit KRC for other purposes.

5.2.4 Information Need of the users

The table 7 shows the type of information need of the users. One questions has been asked by the author to the respondents on what type of information they mainly need is it retrospective or current. The result of the survey is given in the table 7 and figure 7.

Table 7: Type of Information Need (N= 288)

S. No.	Type of Information	Number of Responses	Percentage (%)
1	Current	221	76.74
2	Retrospective	67	23.26
	Total	288	100

Source: Data retrieved during survey

From the table it was found that highest number of 221 (76.74%) respondents preferred Current information while 67 (23.26%) respondents need information of Retrospective type. So, from the above analysis we came to a conclusion that majority of the respondents were preferred using current information.
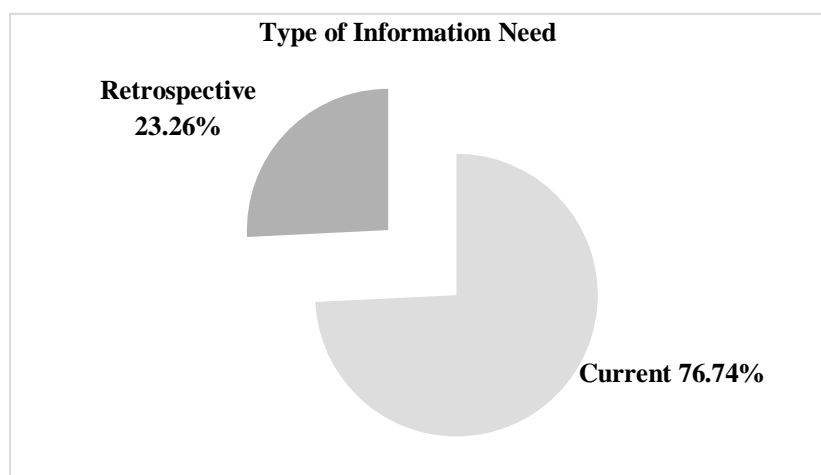
Figure 7: Type of Information Need

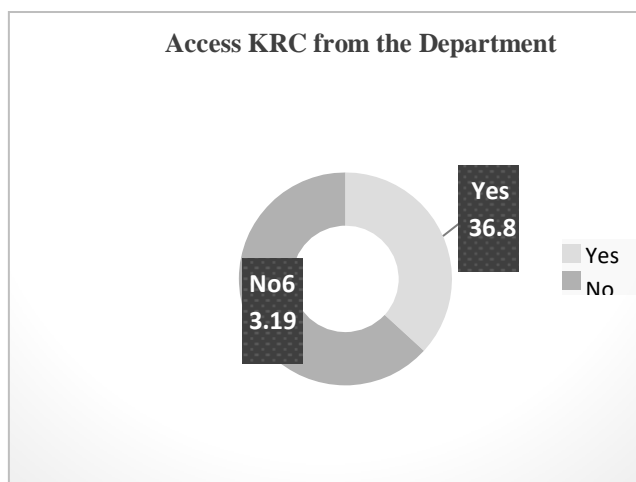### 5.2.5. Accessing the KRC from the Department

The table 8 indicates the rate of accessing KRC from the respective departments of the scientists.

Table 8: Accessing the KRC from the Department (N=288)

S. No.	Access KRC from	Number of Responses	Percentage (%)
1	Yes	106	36.81
2	No	182	63.19
	Total	288	100

Source: Data retrieved during survey

The table 8 and figure 8 shows that 182 (63.19%) respondents do not access the library from the department and the rest of the 106 (36.81%) respondents were access the library from their respective department.

Access KRC from the Department

Figure 8 Access the KRC from the Department

From the above analysis it was found that highest numbers of respondents did not access the KRC from the department. They were preferred to visit the KRC and access it directly for their required information. Some of the respondents have preferred to access the library from the department. The main reasons for accessing KRC from the department were limited time as they areengaged in laboratory works; all the institutes have Wi-Fi campus so they are accessing e-resourcesthrough their campus LAN. Only to searching print volumes of books, journals, theses, reports theyhave visited the KRC (Library).

5.2.6. Type of Document Search

The table 9 analyses the most preferred document type by the users of KRC's of selected CSIR institutes. The documents were mainly text books, reference books, patents, reviews,index, bibliographies, research project, trade literature, encyclopedia, periodicals, conference/ seminar proceedings, standards, newsletters, abstracts, micrographics, theses/ dissertations, hand books, newspaper clippings and others. The table 9 below indicates the frequency, percentageand rank of different document types searched by the users.

Table 9: Type of Documents Search (N= 288)

Type of Documents search	Frequency	Percentage(%)	Rank
Text book	202	70.14	I
Reference Books	149	51.74	III
Patents	87	28.82	VII
Reviews	122	42.36	V
Index	24	8.33	XVI
Bibliographies	39	13.54	XIV
Research Project	143	49.65	IV
Tread Literature	21	7.29	XVII
Encyclopedia	79	27.43	IX
Periodicals	165	57.29	II
Conference/Seminar Proceedings	82	28.47	VIII
Standards	40	13.89	XIII

News Letters	48	16.67	XII
Abstracts	72	25.0	X
Micrographics	9	3.13	XVIII
Theses/ Dissertations	84	29.17	VI
Hand Books	61	21.18	IX
Newspaper clipping	28	9.72	XV
Other	0	0	XIX

Source: Data retrieved during survey

From the above table it is reflected that the highest number of 202 (70.14%) respondents were searching text books which was in rank one, followed by 165 (57.29%) respondent were uses periodicals which ranked as two, 149 (51.74%) number of respondents were using reference books ranked as three, 49.65% research projects, 42.36% using reviews, 29.17% uses theses/ dissertations, 28.82% uses patents, 28.47% uses conference/ seminar proceedings, 27.43% uses encyclopaedias, 25% uses abstracts, 21.18% uses hand books, 16.67% uses newsletters, 13.89% uses standards, 13.54 % using bibliographies, 9.72 % uses newspaper clippings, 8.33% were using index, 7.29% uses trade literature, 3.13% uses micrographics, and others uses 0% which were falls under rank four, five, six, seven, eight, nine, ten, eleven, twelve, thirteen, fourteen, fifteen, sixteen, seventeen, eighteen and nineteen respectively.

From the above analysis it was found that maximum numbers of respondents were searching text books in the KRC and searching of periodical was second in the rank.
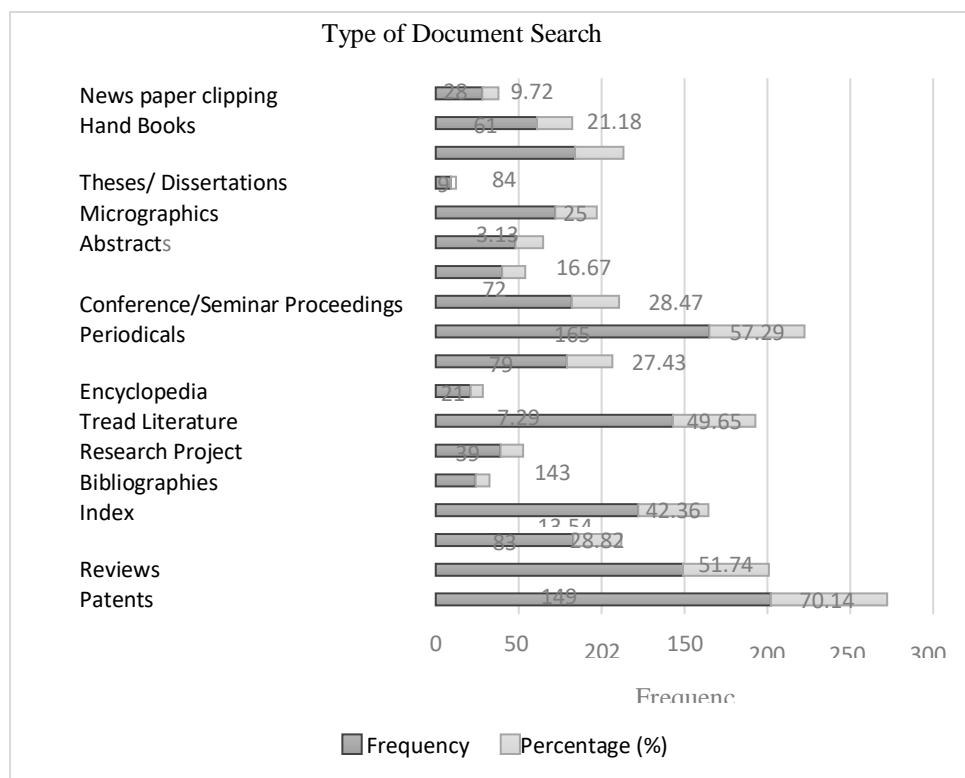
Figure 9 Type of Documents Search

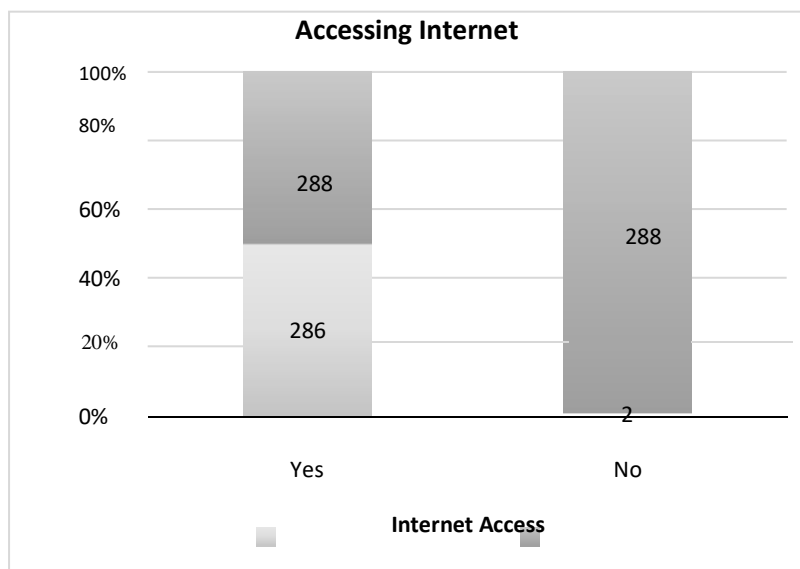### 5.2.6   Accessing Internet by the Respondents

The table 10 and figure 10 below indicates the rate of access of internet by the respondents. For research and development works the scientists were searching internet to get scholarly researchworks in their respective fields.

Table 10. Accessing Internet by the Respondents (N= 288)

S. No.	Access Internet	Number of Responses	Percentage %
1	Yes	286	99.31
2	No	2	069
	Total	288	100

Source: Data retrieved during survey

From the table it could be revealed that, total number of 286 (99.31%) of the respondents were accessing internet and 2 (0.69%) respondents were not searching the Internet.


Figure 10 Accessing Internet by the Respondents

From the study it was noticed that majority of the respondents have accessed the internet as they were significantly depending on communication with the fellow scientists and also, they were searching information in their respective fields to keep up to date. It will help them to increase knowledge, to become more innovative and make them aware about the recent research and development in their respective fields.

5.2.7. Reason for Accessing Internet

Internet is the worldwide network which enables the scientists to access their required information and help them to connect their fellow scientists. The scientists are mainly searching for electronic sources of information which are widely available on internet. These include e-journals, e-books, e-patent, e-reports, e-proceedings, e-databases, e-theses/dissertations. From the figure 11 it reveals that majority of the respondents were accessing internet for searching E- books followedby searching for e- journals, e-theses/dissertations, e-patents, etc.

Reasons for Accessing Internet
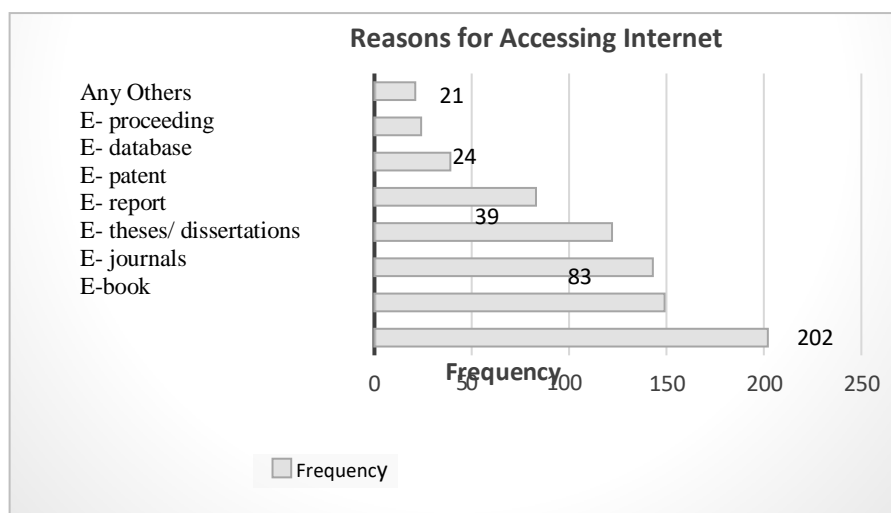
CONCLUSION

From the above study it has been observed that 95.49% users have visited the KRC and rest of the 4.51% have never visited the library. The study also identified that 52.43% respondents have devoted their time for less than one hour daily to the KRC. 72.92% scientists and research scholars visited the KRC mainly 'to borrow book' which was in rank one. From the study it was observed that majority of the respondents have uses current information in their concerned field. The science and technology peoples have frequently access internet and CSIR scientists are not exception of that. Only small group of respondents were not willing to access internet may be due to the age factor. The scientists have preferred to access library from their concerned departments as they have limited time and most of them were mainly dependent on e- resources instead of printed resources. The study reveals that highest number of respondents were searching text books in the KRC and also majority of the respondents were accessing internet for searching E- books followed by searching for e- journals, e- theses/dissertations, e- patents, etc. From the present we came to a conclusion that all the KRC does have provided printas well as online information access like access e-books, e-journals, abstracting database, open access journals and in-house R & D publications and to fulfill the information need of the scientists the selected CSIR institutes should implement latest technologies to their KRC's and should subscribe relevant e-resources.

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