

IMPACT OF E-RESOURCES IN RESEARCH EDUCATION: A STUDY OF SELECTED NATIONAL INSTITUTES OF TECHNOLOGY (NITS) IN INDIA

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Abstract: In the present I.T. era, various e-Resources play a remarkable role in higher and advanced studies in different subject areas. There is a debate between print versions as well as online resources of knowledge/ information. Research Scholars always Access and browse e-Resources and Collections being subscribed or open access Resources in the departmental Library of their institute for their Research studies. E-Resources have updated knowledge/ information and support to give accurate results of the Research work. In Engineering, Science, and Technology (EST) at the National Institutes of Technology (NITs), such e-Resources play a vital role in advanced research work. e Journals, e-Books, Databases, Thesis, Dissertations, Printed books converted into digital formats, video collections, etc., are the significant e-Resources and other sources for taking outputs of the Research work. The NITs subscribe to such e-Resources yearly; URLs/ Links are provided to the users. Some NITs provide Remote Access to e-Resources. During the users' survey 750 users were approached in 15 selected NITs and out of that 725 users responded all the questions. Also, it has been observed that 87.03% users access the e Resources daily, 93.24% browse the e Resources by given publishers' URLs and Links. Similarly, they prefer to access e Resources by online access and secondly by digital resources. In total we can say that the study has given remarkable results and output about the behaviour and trends of the Research Scholars towards the e Resources for their research purposes.

Keywords: e-Resources, NIT, Digital Library, Questionnaires, e-Journals, eBooks, Databases.

1. Introduction:

In National Institutes of Technology, Engineering, Science, and Technology (EST) play a vital role in Research and Development. NIT Libraries subscribe to such e-Resources, which are very much needed for Research studies in various departments and subject areas.

These e-Resources not only diagnose the problems and issues of society but also give solutions. EST support in designing, manufacturing, and producing for our modern civilization. The socio-economic progress of a country is dependent on EST. For the nation's development, advancement in EST is mandatory [1]. In the present I.T. era, constant research work in academic and Research institutes is essential for the nation's development. Many national-level institutes like IIT, NITs, IISERs, IIITs, institutes approved by AICTE, and specific research laboratories are actively involved in research education and have been giving positive results to society [2].

The libraries and resource centres play a significant role in supporting the research work in the institutes. The e-Resources are essential tools available in the libraries for such research work. e- Resources, i.e., e-Journals/Online Journals, e-Books, e-Magazines, Databases, e-

Dissertations, e- Thesis, etc., are such resources that are essential for research studies in the institutes. Libraries also have open-source research literature from eminent publishers around the globe [3].

E-Resources and their utilities: Traditionally, libraries used to have various types of resources available in the printed form, such as Books, Journals, Magazines, Manuscripts, Thesis, Dissertations, Audiotapes, Videotapes, CDs/R.O.M., and Floppies. After 1990, when the influence of technology increased, the way libraries used these-Resources changed, and their use was done through technology. e-Resources are those-Resources that are available in digital form and which the user accesses through electronic devices like computers, mobile, laptops, tablets or book readers, etc.

Need for e-Resources: e-Resources enable the librarian to provide better Library and information services to the users' community. A few many points are mentioned below:

- To get access to an information source by more than one user.
- E-Resources can be searched quickly.
- These can be found easily by the user.
- These e-Resources can be stored in massive amounts.
- The optimal amount of time spent on the Usage of e-Resources.
- Analyses the purpose of using e-Resources by respondents.
- Know different types of e-Resources commonly used by respondents.
- To collect, store, and organize information in digital form.
- Accuracy in Research work can be obtained from e-Resources.

A digital library is the concept of information stored digitally and made accessible to users through digital systems and networks but having no single location. It is, therefore, analogous to a library as a Collection of information but has a virtual existence in digital spaces. A digital library is a fully automated information system with all e-Resources in digital form. e-Resources are the primary source of information dissemination among the Users. One of the standard requirements for a digital library is the ability to deal with distributed collections of information [4].

Table1: Usually Library provides the following e-Resources to its users

S. No.	Types of e-Resources	Description
1	e-Book	e Books are having many formats competing for prime time, including Adobe PDF, Microsoft Reader, e-Reader, Mob pocket Reader, EPUB, Kindle, and iPad.
2	e-Journal	An e-Journal is an essential part of every library collection. e-Journal is an application of information technology.
3	e-Newspaper	An e-Newspaper is also known as an online newspaper or webnewspaper that exists on the World Wide Web or the Internet. Users access it for current affairs and emerging news of entire globe.
4	e-Magazines	E-Magazines are one application of information technology.

5	Indexing and Abstracting Databases	These reference sources provide bibliographic information about the journal, including abstracts of the articles.
6	Full-text Database	A database is an organized collection of information on a particular subject or multidisciplinary subject areas, information within e-databases.
7	Reference database	Many Dictionaries, Almanacs, and Encyclopaedias are available online in electronic format.
8	Statistical database	These databases contain numerical data useful for the mass community.
9	Image collection	Due to the e-images facility's advent, this database type is developed.
10	Multimedia products	These databases include images, videos, audio, and text.
11	e-Thesis	These databases are contained Ph.D. theses and Dissertations published through e-format.
12	e-Clipping	The main objective of e-clipping is a retrospective search and comprehensive analysis of new items.
13	e-Patents	e-Patents are the exclusive right granted by the government to make use of an invention for a specific period.
14	e-Standards	Written definition, limit rule, approved and monitored for complaints by the authoritative agency.

Impact of e-Resources on Library: e-Resources are transforming the library system and the way Research-based studies are done. It has made simple and speedy purchases of information sources like books, journals, and electronic publications. The development of information technology and the dissemination of Web environments dramatically affect user behaviour in information usage. The workflows from acquisitions to user services and the life cycle of electronic resources are quite different from that of print resources since it is characterized by Access without holding the physical objects. As libraries build ever-larger collections of electronic resources, finding ways to manage them efficiently becomes a significant challenge [5].

This study is mainly based on the availability and utilization of e-Resources in the National Institutes of Technology (NITs) libraries by the Research Scholars. For this particular study, selected 15 NITs libraries are the oldest and having all infrastructure, facilities, Labs and well equipped Libraries.

2. Literature Review:

A literature review is a critical and comprehensive summary and analysis of the existing literature and Research studies on a specific topic. It involves systematically identifying, evaluating, and synthesizing relevant sources such as books, scholarly articles, research papers, and other published materials.

The purpose of a literature review can vary depending on the discipline and research context. It's important to note that a literature review is not simply a summary of existing sources. E-Resources are the base of Research work in the EST and other Academic institutes and

Research Organizations. It requires critical analysis, interpretation, and synthesis of the literature to create a cohesive and well-supported narrative that contributes to understanding the research topic. The literature review serves as a foundation for Research, helps researchers situate their work within the existing knowledge base, and guides the development of research questions, hypotheses, and methodologies. A systematic review of the present problem carried out by reviewing earlier published articles and the review papers in journals, conference proceedings, etc., chronologically presented below:

Jotangia (2022) [6] conducted Research to investigate and evaluate how students who are faculty members at postgraduate engineering institutions are associated with G.T.U. Use e-resources. of

59 institutions, 20 postgraduate engineering colleges were chosen for this study, and 1322 questionnaires were given to library patrons. Out of 925 respondents, 786 (84.97%) were determined to be the majority who knew electronic resources were available. A maximum of 78.81% of respondents want to use both the electronic and printed version, according to the results. In comparison, only 17.51% of respondents want to use only the electronic version, and only 3.68% want to use only printed materials. According to the study, many respondents use the linking feature on the library website to look up e-resources.

Parashar and Babel (2022)[7] conducted a survey among 200 users to know the purpose of e-resources, the importance of e-resources, the frequency to access of e-Resources, and the hindrances faced by users, etc. at Modi University of Science and Technology, Laxmangarh. Among the challenges faced by users, 30% of them claim that the lock-off time prevents them from accessing e-resources, while 70% claim to use the Internet and e-Resources almost daily, 50% say they are satisfied with the selection of e-resources, and 30% say they use e-Resources to stay up to date on knowledge.

Ram et al. (2022)[8] studied to identify the challenges experienced by postgraduate students using electronic resources. Ninety postgraduate students' responses to specially designed questionnaires were gathered. It was noted that the institute needs to advertise the content of its e-resources, there are no facilities for expert help and support, no professional or skilled individuals in the Library, and students cannot access paid online-Resources.

Suja and Suresh (2022)[9] researched that to access the e-Resources remotely during the new coronavirus, 70% of users had to download course-related materials, and 63% of library patrons were aware of the institute's e-resource subscriptions. Students have used the National Digital Library e-Resources the most during this session, followed by E-Shod Hindu online-Resources. 57% of users claimed they needed to be made aware of the free online tools publishers and merchants provide. As a result, 70% of users claimed to have asked the library management for training on using e-Resources at the time.

Warkade and Verma (2022)[10] resulted in 150 questionnaires were issued for the study on the Usage of e-Resources by postgraduate students and research scholars in the Arts stream at RDVV University Jabalpur, and 136 completed questionnaires were obtained based on the full answer to these questions. Since 90% of users regularly access the Internet, this study concluded that e-Resources are crucial for students' ability and knowledge growth. The creation

of e- Resources should be a priority for universities and departments since they are gradually replacing print resources and are crucial for learning and Research in the current digital world. Kalsoom et al. (2021)[11] studied the perceptions of e-Resources and their Impact on education; 49% of people access e-Resources occasionally, 28% access e-books, and 27% online books for academic purposes. This study found that students use electronic resources to prepare for lectures, assignments, and course-related Research. Most importantly, they need more internet connectivity, e-Resources are unavailable 24 hours a day, and users need more skills to use e- resources effectively.

Kato et al. (2021)[12] are engrossed development, alertness, adoption, and practice of e-Resources to develop a Digital Library at an academic level. Authors studied and concluded that e-Resources are easy to use and high quality and demand drives the acquisition of Open Access to the material. Software named "Backlight" is used to implement e-Resources in DL. The proposed work pays for theoretical strategy and expansion of the detection tools in the academic (universities) libraries regarding rapid evolution from usual resources in DL to contemporary e- resource bases Digital Libraries.

Nongkseh et al. (2021)[13] explored their studies that e-literacy needs to be implemented by everyone, including students, teachers, and parents. Especially in the pandemic situation, there is a need to formulate an "apt model" to spread e-literacy widely for e-Resources. Authors experimented and concluded that after proper e-literacy, e-Resources consumption has increased from 5% to 95%.

Gaber and Ali (2020)[14] completed a survey on the Impact and challenges of e-Resources in the research output of 274 academic staff of Princess Nourah University (P.N.U.). 84% of academic staff access e-Resources for research purposes, and 81% access curriculum and self for education development. 55% of people access e-Resources through remote Access, 47% access e- Resources through campus accommodation, and only 27% access e-Resources through visiting libraries. According to the response given by academic staff, Access to e-Resources has increased their research, teaching, and educational skills. Language is the main obstacle to using online-Resources, according to 49% of respondents.

Maitato (2020)[15] completed a Sardar Vallabhbhai Patel University of Agriculture and Technology study to learn how to use e-resources, awareness about e-Resources, and reasons for using e-resources. According to the survey conducted for this, most students prioritize hostels to access e-Resources, mainly accessing e-Resources from their smartphones. Besides, most students use e-Resources for assignments. For this study, 120 questionnaires were distributed among students of different categories, of which 55% were male and 44% were female.

Osinulu (2020)[16] investigated the use and awareness of electronic resources for this observation method was used. Out of a total population of 2000 people who used the Library during the academic year 2019–2020, 200 enrolled students were surveyed using a standardized questionnaire. According to its analysis, the majority of students were unaware of the Library's electronic information resources, some respondents had used them, and the majority had done so for educational purposes.

Santhi (2020)[17] discussed using electronic resources in Indian educational institutions. The author has described the studies on various factors, such as the Impact of e-Journals, Library

Consortium, User Attitude, Usability, etc. According to this Research and the studies included in it, today, electronics institutes are replacing traditional resources in academic institutes, benefiting users and improving their research quality.

Bellary and Serve (2019)[18] researched that Engineering databases are in high demand relative to other databases. They found that electronic resources are more popular than print resources. It was found that all e-Resources are in tall order (45.24 %) by faculties using to a great extent every week. Most faculties use e-Resources for Research/Learning (87.71 %) and teaching (20.24 %) purposes. Most faculties prefer to access their Desk, i.e., 96.42 %. It was also found that Faculties were promoting e-resources among the student community by assigning various academic projects like Classroom assignments (52.38 %) and updating their knowledge (47.61%).

Bhat (2019)[19] did a case study on remote Access to e-Resources through E-Z proxy and Remote Xs. According to the user category-wise off-Campus usage report, Faculty-471, Research Scholars-467, Student-76, and Officer / Official-47 have been downloaded. According

to the conclusion, the need for remote Access will increase daily, and most users access e-Resources through their personal notepads, laptops, and mobile phones, so off-campus Access will be required.

Gaffar and Gunjal (2019)[20] explored the usefulness of e-Resources in research studies in NITS Rourkela. Besides this, the role of the central Library has also been discussed in making the e-Resource available to research scholars. The study shows the importance of e-Resources in gathering data from research-oriented students.

Girimalles (2019)[21], libraries are moving from traditional print sources to e-resources. This study finds the dependency of e-resources, problems, and awareness of e-resources. This is a study on using e-Resources by research scholars of the Life Sciences Department of SHIVAMOGGA KUVEMPU University, SHANKARAGHATTA. In the analysis of this particular study total of 60 respondents surveyed, 123 (68.33%) were male and 57 (31.66%) were female, and the majority of respondents were in the age group of 21-23 years (58.33%). And 80% of research scholars access e-Resources through the university library system.

3. Research Methodology:

Assessing the relative advantages and disadvantages of various survey methods or techniques for data collection, some of the ways are interviews, experiments, case studies, questionnaires, etc. For this study, I have selected the leading NITs Also, with taking care of the fact the following methods collected all the data:

- A structured questionnaire has been prepared and distributed systematically among the library staff, faculty members, and research scholars/ postgraduate students.
- Face-to-face interviews of Research Scholars/P.G. students, faculty members, and library staff.
- The collected data have been analysed and presented in a tabular form with the help of statistical methods.
- Data has been collected through Google form by online/ offline method.

□ Various e-Resources have been verified with their usage statistics for the accuracy of the data used.

Limitation of the Study: In India, there are 31 National Institutes of Technology (NITs) in Engineering Science and Technology. Formerly known as Regional Engineering Colleges (RECs) have been upgraded and set up NITs through an act of Parliament by the Government of India. For this Research, I have selected 15 leading NITs having all Research Facilities and advanced e-Resources for the Research-based education system.

4. Analysis and Interpretation:

For the fulfillment of the Research work, Data have been collected from the Research Scholars of these NITs and managed in the tabulations formats. Respondents provided information about the type of e-Resources they are accessing and browsing, satisfaction level, quality of e-Resources, Purposes accessing, hours of studies, etc. Also, they mentioned problems being faced, whether required e-Resources are available, etc.

Table: 1. Source place for search e-Resources

Search Places	Response received	Percentage (%)
OPAC / Web OPAC	164	21.86
Publishers' Full-Text Online Links	430	57.34
Search Engines/ on the Internet	156	20.8
Total	750	100

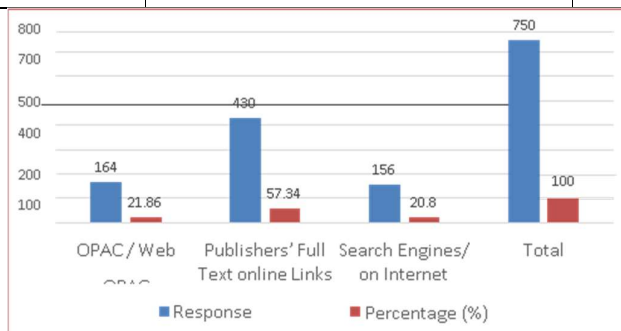


Figure: 1. Source place for search e-Resources

e-Resources are essential resources for finding accurate results of the Research work. Such e-Resources support finding the values and the percentile of the responses. According to Table 4.1, the tabulation data shows that out of 750 Research Scholars from 15 NITs, 430 (57.34%) are taking the help of Publishers' Full-Text online Links in their research work. Similarly, 164 (21.86%) take support OPAC/ Web OPAC in their research work, whereas 156 (20.8%) Scholars take an interest in accessing information from search engines on the Internet. Out of 750 Research Scholars, 750 (100%) have shown their trends in accessing e-Resources for their Research work/ studies, which is the remarkable result of the survey.

Table: 2. The place preferred by the Users for accessing the e-Resources

Places	Response received	Percentage (%)
Library	228	31.45
Digital Library Section	206	28.41
Hostels	103	14.21
Departmental Lab	99	13.65
Computer Centre Labs	83	11.45
Another site, if any, please mention	06	00.83
Total	725	100

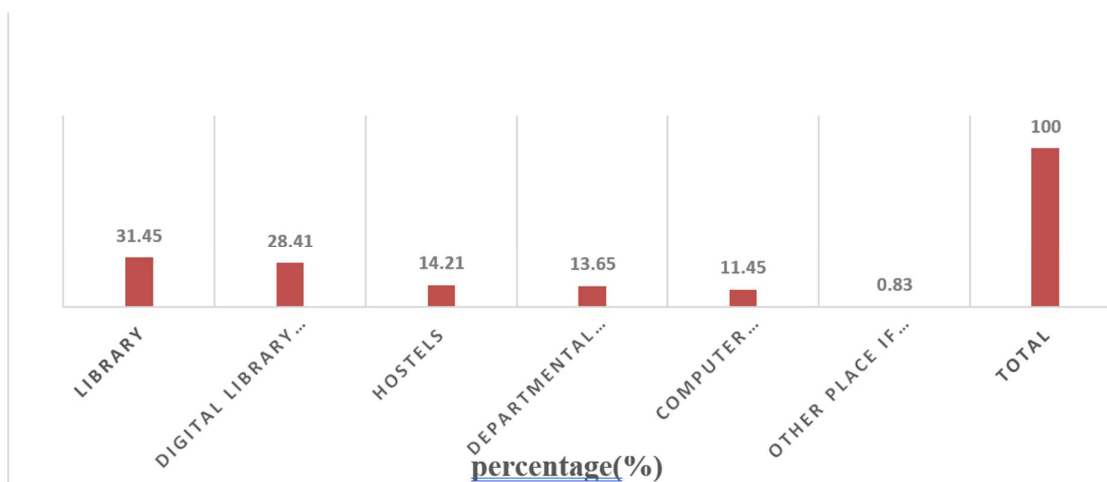


Figure: 2. The place Preferred by The Users for Accessing the e-Resources

Users or Research Scholars always find a place to access all study materials, including e-Resources, comfortably and study without disturbance. Out of 750 Research Scholars, 725 Users responded to the survey and replied at their convenience. In Table 4.2, the data show that a maximum of 228 (31.45%) users like to visit the Library to access the e-Resources for their research work. Also, the table shows that 206 means 28.41% of research scholars browse the e- Resources in the Digital Library Section, where they feel comfortable studying constantly and without any disturbance. Hostels are the suitable place for them after the proper places and where 103 (14.21%) Users continue their studies of Research work. Network and Wi-Fi facilities are available in every room of the Hostels for accessing Internet-based services, including e- Resources.

Similarly, 99 (13.65%) Research Scholars and 83 means 11.45% users access e-Resources comfortably at Departmental labs and Computer labs, respectively. Only 6 Users like places other than those mentioned above. So in the survey, it is found that Research Scholars have an interest in accessing and browsing e-Resources, mostly in libraries, Digital libraries, Hostels,

Departmental Labs, or Computer Labs. Therefore, it has been observed that Research Scholars avail the facility of e-Resources optimally for their research work and the accuracy of the research output.

Table:3. URLs/ Links of available e-Resources are shown on the website/webpage of the Library

Response	Response received	Percentage (%)
Yes	676	93.24
No	49	6.76
Total	725	100

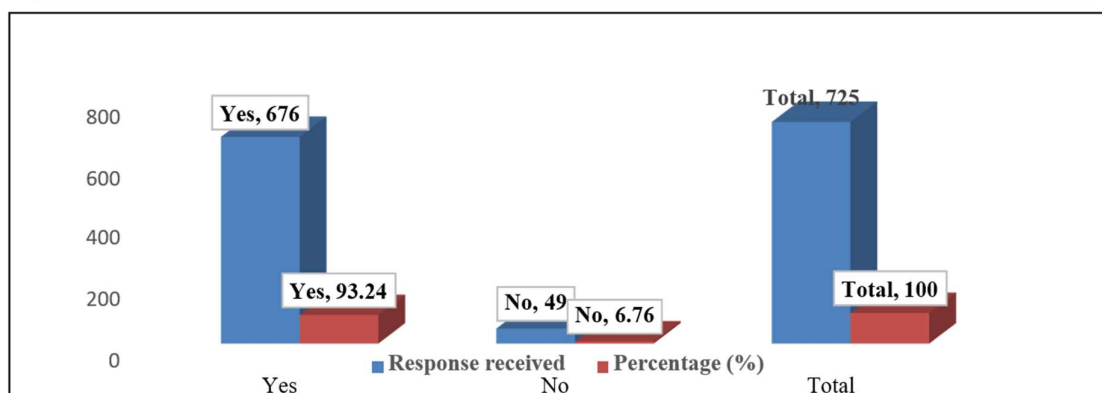


Figure:3 URLs/ Links of available e-Resources are shown on the website/webpage of the Library.

It has been observed that URLs or Links of the e-Resources are not available or placed in places where a user can't locate the links. Sometimes publishers change or replace the URLs and do not share the links with the subscribing institutes, resulting in users being unable to access and browse the e-Resources. So out of 750 users of all the 15 NITs, 725 users responded, as mentioned in the table 4.3. The survey was done to know whether URLs / Links of Resources are correctly found. Out of 725 Research Scholars, 676 (93.24%) found the required URLs / links at suitable places and are acceptable. It is observed that while subscribing to the e-Resources, URLs/ Links are provided along with the resources. However, 49, which means 6.76% of users, faced some issues in locating URLs/Links and responded NO.

Keeping the above tables and the Data chart drawn above in view, most of the Research Scholars do not face any issue related to URLs/ Links.

Table:4. Liked by the users for getting assistance in accessing e-Resources

Activities	Response received	Percentage (%)
Conducting an Orientation program for the newly registered Users	201	27.72
Conducting Awareness programs frequently	111	15.31

Display of guidelines User path for browsing	102	14.07
Display of e-Resources with links/URLs on the website	109	15.03
Display of Useful links on the University website	69	9.52
Displaying e-Resources links on the Library website	66	9.10
Display of new arrivals of e-Resources	49	6.76
Displaying New additions of e-Resources	18	02.48
Total	725	100

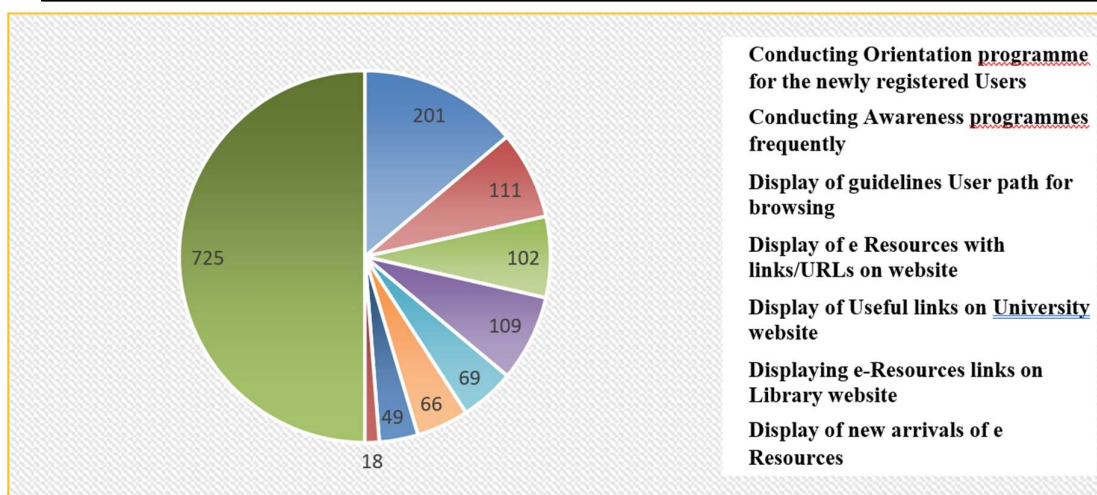


Figure 4. The way is liked by the Users for getting assistance in accessing e-Resources

Sometimes users need some assistance in accessing e Resources, as it remains difficult to understand the method or the path of access. Also, Orientation and hands on training is equally important. Table 4.4. shows that users/ research scholars have various options like, Conducting an Orientation Conducting Awareness programs frequently n program for the newly registered Users, Displaying e-Resources links on the library website. Out of 725 Research Scholars, 201 users mean 27.72% like Orientation programmes, whereas 111 users (15.31%) liked Awareness programmes about e Resources. Similarly Graph of the users' response shows that some of them like new arrivals, new additions of e Resources, library websites comprising details of e Resources etc.

Table:5 Type of Resources accessed by the users

Type of e-Resources	Response received	Percentage (%)
Digital Resources	227	31.31
Online-Resources	498	68.69
Total	725	100

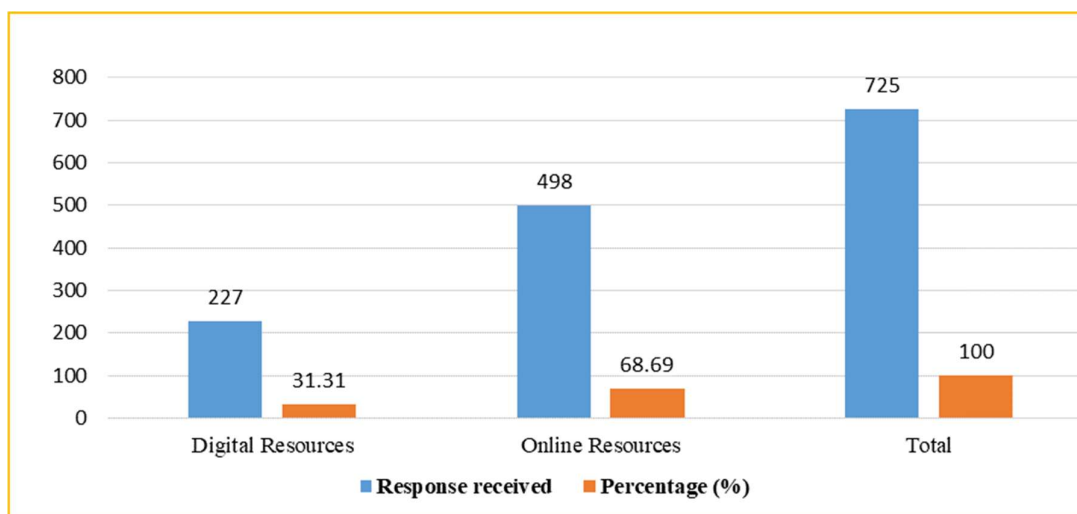


Figure 5 The users access e-Resources

It has been observed that most of the Research Scholars access and browse e-Resources compared to Digital Resources. Digital Resources are also used for Research-based studies; however, e-Resources are used widely. As replies received from users, 498 (68.69%) Scholars have shown their trends in accessing e-Resources, whereas 227 (31.31%) have shown their interest in Digital Resources. In NITs, e-Journals and Databases are used more in research studies. Libraries provide subscribed and open sources to their users. E-Resources always support accuracy in results. Also, it has been seen that both types of information resources are considered for advanced studies. Therefore, out of 750 Scholars, 725 users replied, and the graph shows that in a survey done with 725 respondents, 100% of responses were studied here.

Table: 6 Purpose for the Usage of e-Resources

Purpose for Usage	Response received	Percentage (%)
Higher Study	100	13.79
Research	350	48.28
Update knowledge	150	20.69
Recreation	55	7.59
Professional development	70	9.65
Total	725	100

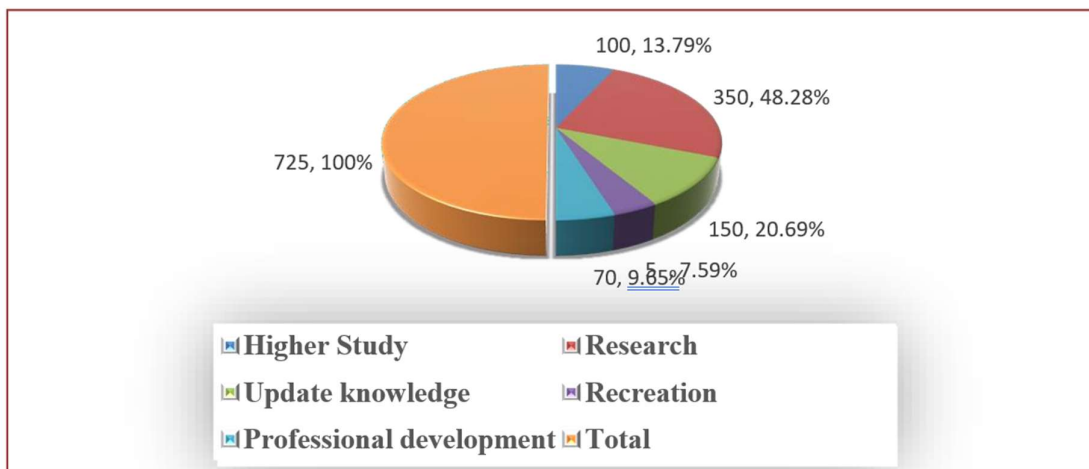


Figure 6 Purpose for the Usage of e-Resources

e-Resources are essential for higher studies, especially in Engineering Science and Technology (E.S.T.). Users prefer e-Resources to access not only for basic searches but for the depth of knowledge of their subject areas. The table above 4.6 shows the trends and purposes for accessing e-Resources. According to that, 350 (48.28%) users have mentioned "Research" for the purpose, whereas 150 (20.69%) have shown their interest in updating knowledge. Also, 100 (13.79%) users access e-Resources for Higher studies, and for Recreation, 55 (7.59%) users have shown their interest in browsing the e-Resources. Another side, 70 (9.65%) are using resources for Professional Development.

Table 7: Benefits / Advantages of e-Resources

Benefits/ Advantages	Response received	Percentage (%)
Accessibility of e-Resources	40	5.52
Speed of Browsing	39	5.38
Publishers' support	28	3.86
Easy in Searching	34	4.69
Hyperlinks to References	31	4.28
Graphics Capabilities	28	3.86
Online Reading	33	4.55
Accessibility from various places	32	4.41
Timeless/Quick Availability	33	4.55
Availability of Full text	10	1.38
Download Services	29	4.00
Archival Records	26	3.59
Easy Access e-Resources	28	3.86
Simultaneous Access	31	4.28
Supportive in Distance Learning	33	4.55
Users' oriented Acquisition	26	3.59
Instantaneous Browsing of e-Resources Purchase	29	4.00
Space Management/Saving	24	3.31
Theft Control	25	3.45

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Reduces the Need for Physical Space	18	2.48
Advance availability than the print version	24	3.31
Comfortable in turning/skipping pages etc.	25	3.45
Saving Binding Cost	21	2.90
Helpful in avoiding misplacing or hiding the-Resources	23	3.17
Updating the capability of e-Resources	24	3.31
Saving in Freight Charges on Resources	24	3.31
Better Interactive in Comparison to other media	6	0.83
For any other, please specify	1	0.14
Total	725	100

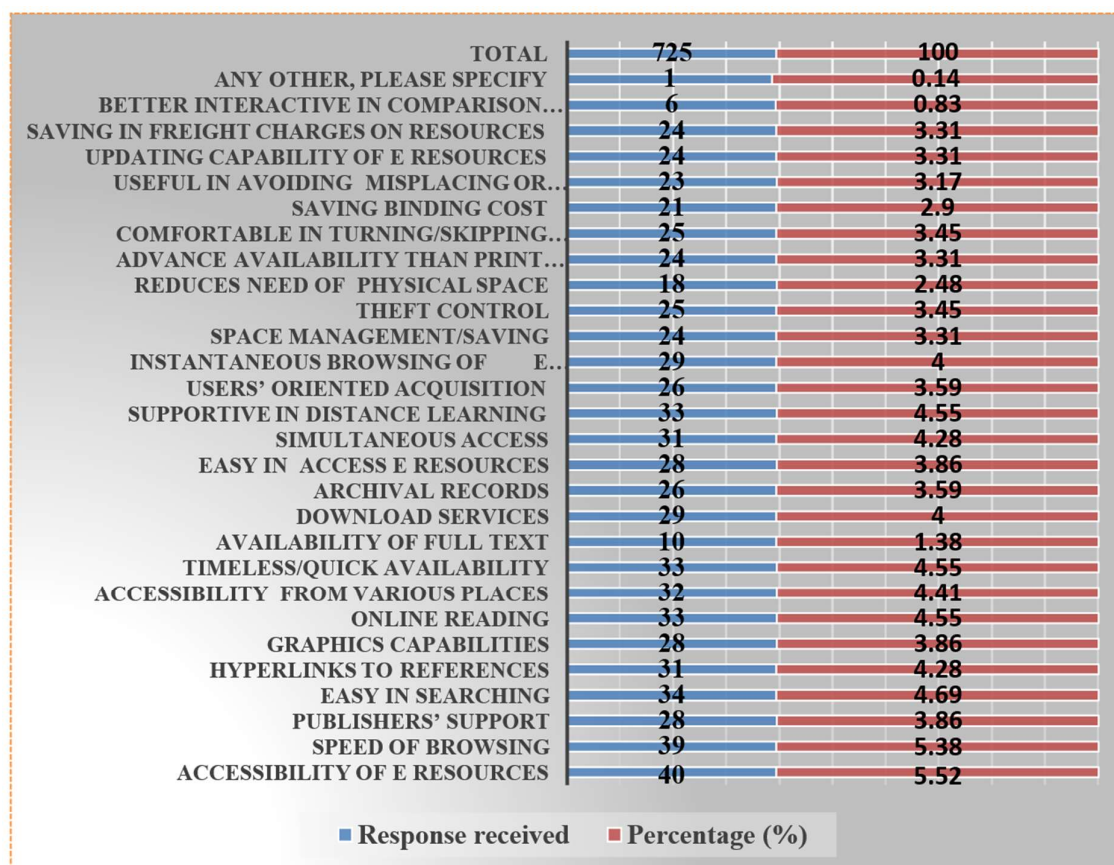


Figure:7. Benefits / Advantages of e-Resources

e-Resources always support the users in their various studies and knowledge development. While Research Scholars access e-Resources, they have some purposes for the use of such e-Resources. Users have responded to the multiple benefits and advantages of e-Resources. Table 4.7 has covered so many benefits and advantages of e-Resources. Out of 750 Research Scholars, 725 responded; out of that, all users have expressed the various benefits. Accessibility of e- Resources, Speed of Browsing, Publishers' support, ease of Searching, Hyperlinks to References, Graphics Capabilities, Online Reading, Accessibility from various places, Timeless/Quick Availability, Availability of Full text, Download Services, Archival Records,

Easy in Access e- Resources, Simultaneous Access, Supportive in Distance Learning, Users' oriented Acquisition, Instantaneous Browsing of e-Resources Purchase, Space Management/Saving, Theft Control, Reduces Need of Physical Space, Advance availability than the print version, Comfortable in turning/skipping pages, etc., Saving Binding Cost, Useful in avoiding misplacing or hiding the- Resources, Updating capability of e-Resources, Saving in Freight Charges on Resources, Better

Interactive in Comparison than other media are the some of the benefits and advantages for accessing various e-Resources for the research education.

Table: 8. No. of hours given by users to access e-Resources per day

Hours	Response received	Percentage (%)
2-4	137	18.90
4-6	190	26.21
6-8	253	34.90
8-10	121	16.69
10-12	24	3.31
Total	725	100

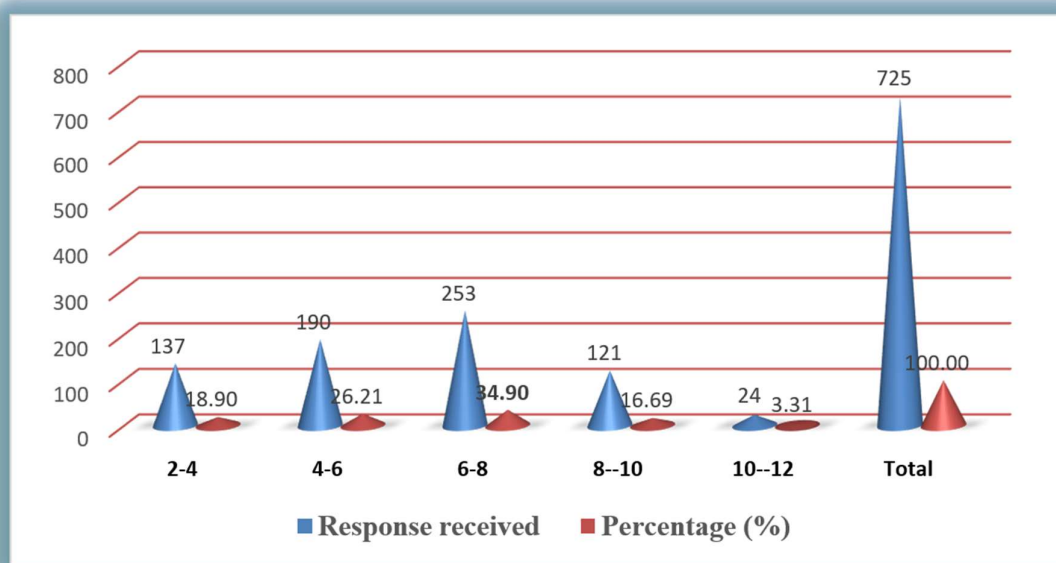


Figure 8 No. of hours given by users to access e-Resources per day

As research scholars always remain attached to information browsing and collecting various data related to their studies, they provide maximum time to research-oriented work. Similarly, e- Resources, especially in E.S.T., provide innovative ideas and emerging trends of Research. According to Table 4.8 and the graph regarding trends of giving time to use and accessing e-Resources by the users, different results have come out. Out of 725 respondents, 253(34.90%)

Research Scholars have been giving 6 to 8 hours per day to accessing e-Resources, whereas 190 (26.21%) have been giving 4 to 6 hours per day of their time, 137 (18.90%) users are showing 2 to 4 hours per day, 121 (16.69%) research Scholars give 8 to 10 hours and maximum time 24

(3.31%) scholars are providing 10 to 12 hours.

Table 9: How the users have ranked Access to e-Resources

Rank	Response received	Percentage (%)
Excellent	507	69.93
Very Good	194	26.76
Good	24	3.31
Average	0	0
Total	725	100

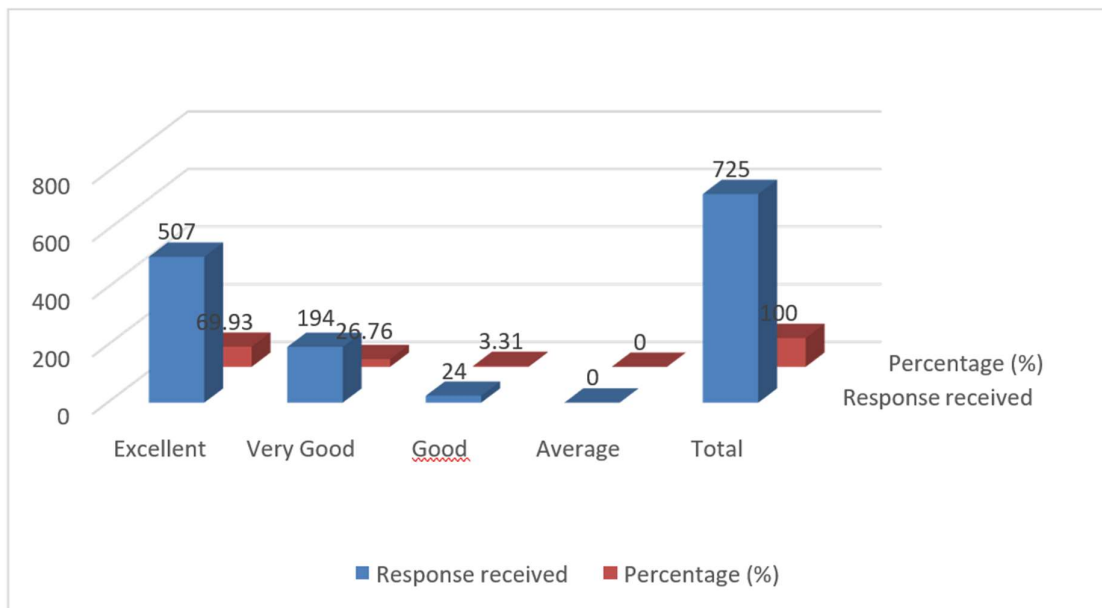


Figure: 9 Ranked by the users to access e-Resources

User satisfaction is essential for research studies. E-Resources are also subscribed or compiled as per the need of the users. Based on the condition of the users and per the recommendations of the concerned Faculty members, Heads of the departments, and research supervisors, various e-Resources like e-books, e-journals, databases access, and many more are subscribed in the institutes. Table 4.9 of the above survey shows that scholars have shown their satisfaction level out of 725 users/ research. As per the table and graph 507, i.e., 69.93% of users have given the rank of "Excellent, 194 Research Scholars i. e. 26.76% have expressed as "Very Good." Similarly, 24 users mean only 3.31% have given a rank of "Good." Not a single user has mentioned the average level of e-Resources, which means e-Resources being used by them are really useful and very much needed for their studies.

Table:10. Frequency of Accessing e-Resources by the Users

Frequency	Response received	Percentage (%)
Daily	631	87.03
Weekly	75	10.34
Fortnightly	19	2.62
Monthly	0	0.00
Total	725	100

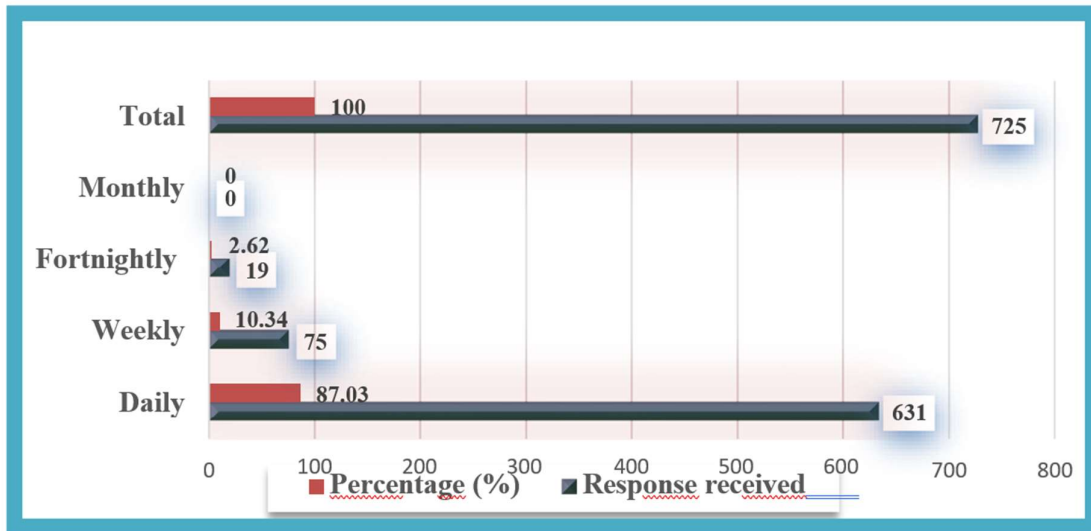


Figure:10 Frequency of Accessing e-Resources by the Users

In Research Education, users access e-Resources regularly. They remain engaged in their studies all the time. Also, they access the e-Resources as per their need and based on the demand of the subject areas. Daily, Weekly, Fortnightly, and Monthly are the different frequency categories of accessing or browsing e-Resources. According to Table 4.10 and the related graph above, out of 725 user replies, 631 means 87.03% of Scholars use e-Resources "Daily." Also, 75 (10.34%) users access the-Resources "Weekly". Another side, 19 (2.62%)users access e-Resources "Fortnightly." Zero users do Monthly Access. The table shows that e-Resources are used frequently for research studies regularly.

5. Analysis and findings: As everyone knows that e Resources are an essential resource specially for Research and Development. In academic institutions especially in Engineering, Science and Technology (EST), these e Resources play a significant role in research studies. For the study of usage of e Resources for the research education, selective 15 well established National Institutes of Technology (NITs) having required Laboratories and well-resourced Libraries were selected. During the users' survey 750 users were approached in 15 selected NITs and out of that 725 users responded all the questions. Also it has been observed that 87.03% users access the e Resources daily, 93.24% browse the e Resources by given publishers' URLs and Links. Similarly, they prefer to access e Resources by online access and secondly by digital resources. In total we can say that the study has given remarkable results

and output about the behaviour and trends of the Research Scholars towards the e Resources for their research purposes.

6. Conclusion:

e Resources are the backbone of any library or institute/university where research work is done at a very high level. Such resources as e-books, e-journals, databases, and online journals of various subject areas of research studies are subscribed. The library conducts orientation programs to access e-Resources optimally. Libraries of NITs get various e-Resources from the e- Shodh Sindhu Consortium by subscribing to some Open sources for the Research Scholars. The Users' Survey of 750 Research Scholars from 15 National Institutes of Technology were approached through a Questionnaire, and out of that, 725 users responded positively. The responses given by the Research Scholars in 10 replies have shown the trends of accessing e Resources and research studies. Tabulations are comprising number of responses and their percentages. Finally, e-Resources are very much needed and mandatory Tools and resources for innovative and updated information on different research subject areas. NITs Libraries subscribe to the e-Resources on the recommendations of the concerned academic departments. e Shodh Sindhu Consortium (e SS) from INFLIBNET Centre (UGC), Government of India is also an important source of such valuable e-Resources. NITs also subscribe required e Resources for the Research Scholars.

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