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USE AND ADEQUACY OF E-RESOURCES BY FACULTY AND STUDENTS IN SELECTED ENGINEERING INSTITUTIONS AFFILIATED BY RTU: AN EMPIRICAL STUDY

Dalla Ram Bhincher[1*] and Dr.Asha Sharma[2]

[1]Research Scholar, Banasthali Vidyapith, Rajasthan, India

[2]Deputy Librarian,Central Library Banasthali Vidyapith, Rajasthan, India

*Corresponding Author: Email: drbhincher2006@yahoo.com

Abstract: In the digital environment of the present educational system, e-resources are the biggest resources to meet the needs of the users. This study aims to examine the availability and use of e-Resources in libraries. Students and faculty members are the user groups that use libraries the most quickly. For this purpose, faculty members and students of 20 technical institutions affiliated with Rajasthan Technical University, which rank in the quality index value of the university and are located in Jaipur, have been targeted. For this particular study, 800 questionnaires were sent out to the faculty members, research scholars, postgraduate, and undergraduate students who frequented the libraries of these institutions, and 720 of those users responded. This study attempted to analyze whether e-Resources are available in various libraries according to the academic requirements, research requirements, and knowledge upgradation of users, for what purpose they access e-Resources, and what problems they face. According to the findings of this study, 66% of library users use e-Resources to meet their academic needs. According to 80% of the responses, the library is the preferred location to access e-Resources. Lack of effective management of internet and network infrastructure in libraries and non-availability of adequate e-Resources as per the users' academic, research, and knowledge improvement needs is the biggest constraint in accessing e-Resources.

Keywords: e-Resources, QIV, RTU, questionnaires, e-journals.

1. Introduction:

The time we live in is a digital era. Libraries are no exception to the use of information and communication technology applications in the workplace across all organizations. Digital libraries can hold considerably more information than traditional libraries since they need much less physical room to house it than traditional libraries do. E-Resources have increasingly begun to replace print collections in the hands of users [1]. E-Resources are now widely used because they make it easier for users to obtain knowledge by reducing obstacles to instruction and learning. E-Resources are essential in the information technology age that we live in. The majority of sources are now accessible online [2].

E-Resources refer to digital information and materials accessed through a variety of digital components or devices, such as computers, smartphones, tablets, and e-readers. In this digital era, when the educational environment is moving completely towards online and digital

platforms, the concept of libraries is also changing, almost all libraries are converting their services to digital [3]. Since e-Resources are now used by the majority of library users, libraries are either generating or subscribing to these resources as they are the most crucial instrument for the teaching and learning process of the institution. In engineering education, when technology changes constantly, users need the latest information and many measurement agencies like the National Board of Accreditation (NBA) and The National Assessment and Accreditation Council (NAAC) focus on e-Resources. Apart from this, e-Resources are important for research and development, so institutes procure e-Resources to maintain the quality of the teaching-learning process [4].

e-Resources Concept and Characteristics: Library is the backbone of any institute and a good library and quality education is the face of the quality of the institute. Traditionally libraries used to have various types of resources available in a printed form such as Manuscripts, Journals, Books, Magazines, Thesis, Dissertations, Audiotapes, Videotapes, CD/ROM, and Floppies. After 1990, when the influence of technology increased, the way libraries used these resources changed and their use was done through technology. The library landscape has changed a lot in the Digital age [5]. E-Resources are sources where data is electronically stored and made accessible via networks and other electronic channels. Remote access to e-Resources is possible via the Internet [6]. 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. [7]. Some of the features of e-Resources are as follows.

- No time barrier accessible 24×7
- No distance barrier
- Articles/Issues of journals appear online before their print version is available
- Saving library space
- Multiple features like notification, and miler field articles are also available

The library provides resources according to the requirement and standards of its users. Usually, the library provided the various e-Resources to its users as shown in figure-1.

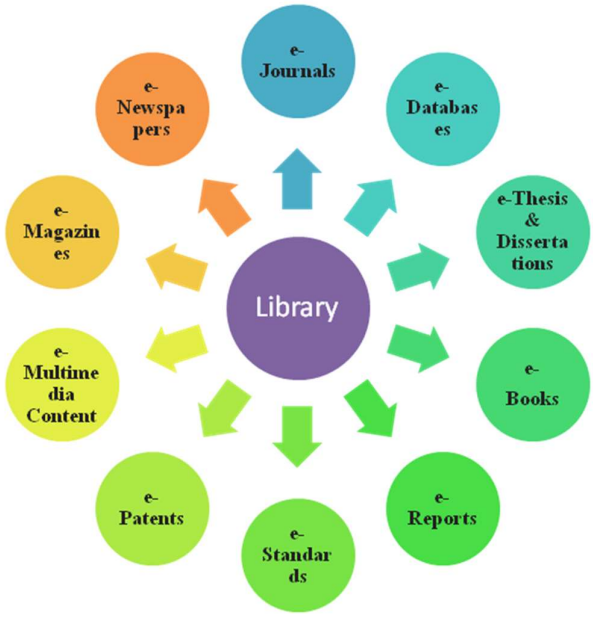

Fig.1: Common e-Resources available in the library

This study focuses on the accessibility and use of e-Resources in various institute libraries. For this study, 20 institute libraries that are affiliated with Rajasthan Technical University Kota and ranked in its Quality Index Value (QIV), and are situated in the city of Jaipur have been chosen.

2. Literature Review:

The term "Literature Review" consists of the words "review" and "literature," where "review" refers to the organization of knowledge in a particular field of study to construct an edifice of experience to show that this study would be a valuable addition to that field, and "literature" has a different meaning than in the traditional sense. "A literature review is a complete assessment of prior study on a topic that includes surveys of scholarly articles, books, and other relevant sources". 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:

According to Balasubramani et al. (2022)[8] has been done a study with 277 faculty members from 13 departments at Sri Ramakrishna Engineering College regarding their use and knowledge of electronic resources was undertaken. This study reveals that 91 respondents from the O'Reilly Open Book and Engineering books, 128 respondents from Springer online journals, and 218 respondents from IEEE online resources are highly informed. 65 Ph.D., 25 ME/M. Tech, 134 M.Phil, and 26 MBA/MCA, etc. participants took the survey. 21 Professors, 31 Associate Professors, and 203 Assistant Professors were among the faculty members, and the majority of them had six to ten years of expertise. 44% of faculty members strongly think that having access to e-Resources has helped them become better teachers.

Jotangia (2022)[9] survey was conducted research to investigate and evaluate how students who are faculty members at postgraduate engineering institutions associated with GTU use e-Resources. Out 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 that there were electronic resources available. According to the data, a maximum of 78.81% of respondents prefer using both the electronic and printed form, while just 17.51% and 3.68%, respectively, prefer using exclusively printed materials. According to the survey, many participants utilize the library's website's linking feature to look up e-Resources.

Merande et al. (2022)[10] researched the four specific libraries of Kenyan public academic libraries: Jomo Kenyatta University of Agriculture & Technology, Multimedia University, Technical University of Kenya, and Kenyatta University. In this study, e-resource access suggestions have been made, with the key ones being electronic resource training, e-resource policy improvement, user awareness campaigns, dependable internet services, and enough funding for e-Resources. Users lack access to adequate computers and other multimedia equipment, and it is also apparent that library staff members require suitable training.

Parashar and Babel (2022)[11] surveyed 200 users to knowing 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. 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)[12] studied to identify the challenges experienced by postgraduate students using electronic resources. 90 postgraduate students' responses to specially designed questionnaires were gathered. It was noted that the institute does not advertise the content of its e-Resources, there are no facilities for expert help and support, there are no professional or skilled individuals in the library, and students cannot access paid online resources.

Suja and Suresh (2022)[13] researched that to access the library's 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 online resources the most during this particular session, followed by E-Shodshindu online resources. 57% of users claimed they were unaware of the free online tools that publishers and merchants provide at this time. 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)[14] resulted from the 150 questionnaires issued for the study on the usage of e-Resources by research scholars and postgraduate students in the Arts stream at RDVV University Jabalpur, and 136 completed questionnaires were obtained based on the total 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.

Kumar and Anjaiah (2021)[15] did a study to determine the need, degree of satisfaction, and improvement in faculty members' utilization of the e-Resources accessible in various engineering college libraries. According to 300 faculty members from two engineering colleges who participated in this survey, they have access to e-Resources that may be used to enhance teaching and learning as well as publish research publications. There is an urgent need to conduct the hand-on-workshops, and training programs for users for more utilization of e-Resources to deliver the current subject-related information.

Kato et al. (2021)[16] researched the effectiveness of the university-level digital library system and its usability from the user's perspective. The usage, accessibility, and user behavior of online resources were the focus of 81 research publications that the author analyzed for this study. In addition, many consortium studies were conducted. In this study, user perception of online resources is also explored.

Mukh and Rajneesh (2021)[17] the e-Resources platform initiative by the government of India and the various e-Resources and information available on them are mentioned in this research article. this particular article includes the MOOCs platform, national digital library, advanced India campaign, global initiative of academic networks, imprint India, prime minister research fellows, uchchtar avishkar yojana, smart India hackathon, national institutional ranking framework (NIRF), higher education financing agency (HEFA), rashtriya madhyamik shiksha abhiyan (RMSA) and e-pag pathshala etc. for knowledge and information sharing of all these platforms, the librarian is an important person who can give complete information to the students.

Kalsoom et al. (2021)[18] studied the perceptions of e-Resources and their impact on education, 49% of people access e-Resources occasionally and 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 lack sufficient internet connectivity, e-Resources are unavailable 24 hours a day, and users lack the skills necessary to effectively use e-Resources.

Gaber and Ali (2020)[19] completed a survey on the impact and challenges of e-Resources in the research output of 274 academic staff of Princess Nourah University (PNU). 84% of academic staff access e-Resources for research purposes and 81% of academic staff access for curriculum and self for education development. 55% of people access e-Resources through remote access and 47% of people access e-Resources through campus accommodation and only 27% of people access e-Resources by 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)[20] completed a study of Sardar Vallabhbhai Patel University of Agriculture and Technology to find out how to use e-Resources, awareness about e-Resources, and reasons

for using e-Resources. According to the survey conducted for this, most of the students give priority to hostels to access e-Resources and they mostly access 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, out of which 55% were male and 44% were female respondents.

Santhi (2020)[21] discussed the use of electronic resources in Indian educational institutions. The author has described the studies done on various types of 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, which are also benefiting the users, thereby improving their research quality.

Bhat (2019)[22] did a case study on remote access to e-Resources through EZproxy and RemoteXs. 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 day by day and most users access e-Resources through their personal notepads, laptops, and mobile phones, so off-campus access will be required.

Girimallesh (2019)[23] said that libraries are moving from traditional print sources to e-Resources. This study discovered e-resource dependencies, issues, and awareness. Researchers from the Life Sciences Department of Shiv Moga Kuvempu University, Shankaraghatta, conducted this study on the usage of electronic resources. In the analysis of this specific study, there were 60 total respondents, of whom 123 (68.33%) were men and 57 (31.66%) were women. The majority of respondents (58.33%) were between the ages of 21 and 23. And the university library system is used by 80% of research academics to access online resources.

As per the above literature, it was observed that e-Resources play a significant role in the modern scenario of libraries. Most of the researchers completed their study on the collection, development, and demand of e-Resources for new-generation users. The present study examines the existence of various e-Resources and databases in engineering colleges.

3. Research Methodology:

Various techniques were used for primary data collection of this study questionnaire, face-to-face interviews and feedback from library staff, etc. For secondary data collection, library acquisition, and purchase policy, usage statistics, library footfall, etc. were studied from library records has been taken. A total of 800 questionnaires were sent to the users of different library categories such as Faculty members, Postgraduate students, Undergraduate students, and Research scholars out of which 720 completed questionnaires were received including 20 faculty members, 20 postgraduates as well as 10 research scholars who were interviewed face to face.

Limitation of the Study: This study has been restricted to cover 20 leading RTU Engineering Institutions which are ranked by Quality Index Value (session 2020-21) and also located in Jaipur city as listed in table-1.

Table-1: List of selected engineering colleges

S. No.	QIV Score	NAME OF ENGINEERING COLLEGE	Year of Establishment
1	935	Swami Keshvanand Institute of Technology, Management & Gramothan	2000
2	890	Poornima College of Engineering	2000
3	875	Poornima Institute of Engineering and Technology	2007
4	874	Jaipur Engineering College & Research Centre	2000
5	808	Arya Institute of Engineering & Technology	2005
6	769	Arya College of Engineering & Information Technology	2000
7	670	Arya Institute of Engineering Technology & Management	2013
8	663	Anand International College of Engineering	2010
9	648	Global Institute of Technology	2002
10	643	Kautilya Institute of Technology & Engineering	2002
11	641	Rajasthan College of Engineering for Women	2002
12	638	Arya College of Engineering & Research Centre	2007
13	614	Shankara Institute Of Technology	2001
14	612	Vivekanand Institute of Technology	2008
15	607	Rajasthan Institute of Engineering & Technology	2000
16	555	Jaipur Engineering College	2000
17	544	Jagannath Gupta Institute of Engineering & Technology (JNIT)	2004
18	527	Sri Balaji College of Engineering & Technology	2000

19	510	Yagyavalkya Institute of Technology	2002
20	496	Poornima Group of Institutions- Faculty of Engineering & Faculty of Management	2009

4. Analysis and Interpretation

The information from the respondents is included in the tables and figures below, including the user category, the quality of the online resources, why people use them, and the location where they are accessed. Use of online resources, weekly allotment of time for accessing online resources, benefits of doing so, accessing online materials presents challenges, Software for institutional repositories, automation of libraries e-Resource bundles, spending plan, journals, etc.

User Group: A user group is important for the overall development of the institutions. Faculty members and students are the major stakeholders in terms of academic standards. Here a total of 800 users from the user groups i.e. faculty members, students (UG), students (PG), and research scholars were taken for the questionnaire. Out of these, a total of 720 questionnaires were received either filled by the users or taken through face-to-face interviews. Table-2 and figure-2 show the Number of user groups.

Table 2: Number of the user group

S.No.	User Group	Respondents	%
1	Faculty Member	170	23.61
2	Student (UG)	505	70.13
3	Student (PG)	40	5.55
4	Research Scholar	5	0.69

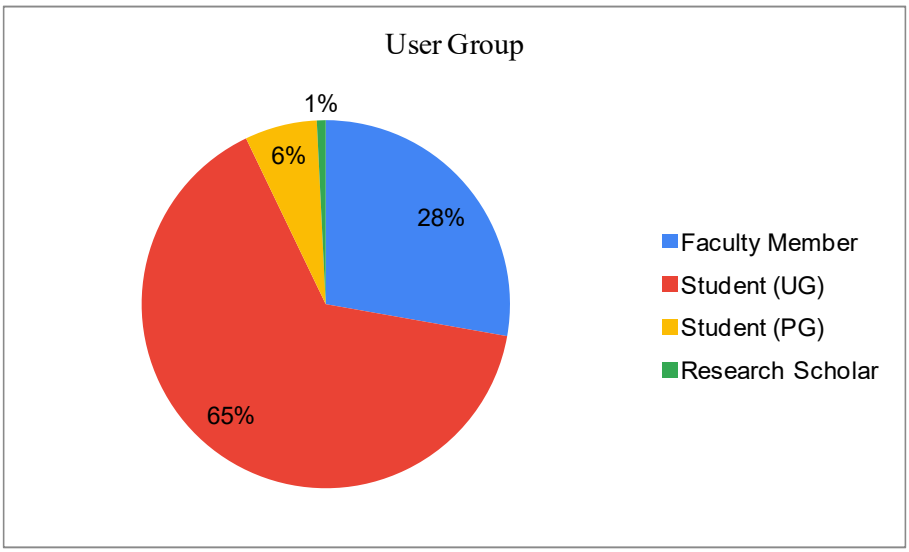

Fig.2: Percentage of user group

Overall Quality of the e-Resources provided by the Library: A total of 720 responses were received for the overall quality survey of e-Resources provided to users by various institute libraries, and 66.94 percent of the respondents said that they are very satisfied with the online resources provided by the library and it is sufficient for their needs. Table-3 and figure-3 show the number and percentage of respondents for the overall Quality of the e-Resources provided by the Library.

Table 3: Number of respondents satisfied with the quality of e-Resources

S.No.	Overall Quality of the e-Resources Provided by the Library	Respondents	%
1	Very Satisfied	482	66.94
2	Satisfied	178	24.72
3	Not Satisfied	36	5.00
4	Very dissatisfied	24	3.33

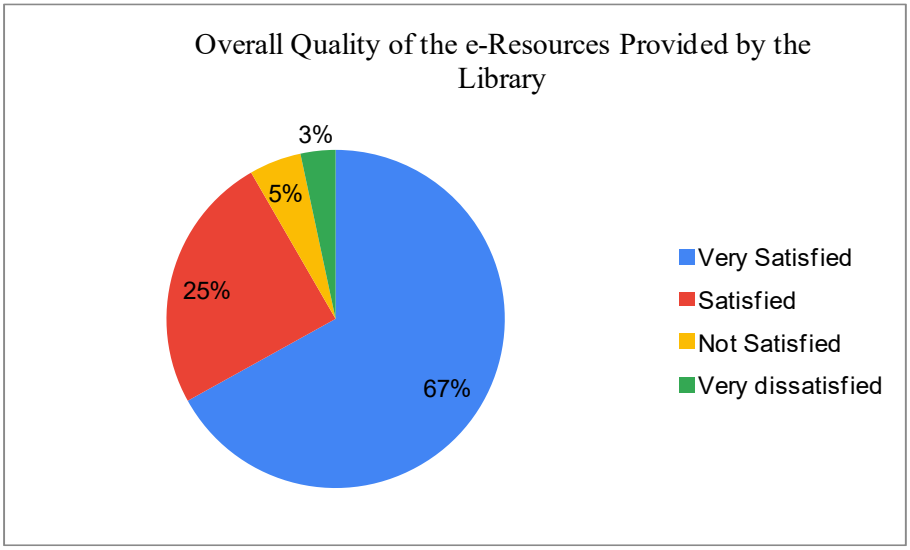

Fig.3: Percentage of respondents satisfied with the quality of e-Resources

Purpose of using e-Resources: A total of 2103 mixed approach responses were received from 720 respondents to use e-Resources, in which 625 users said they use e-Resources for study, and 415 users said they use e-Resources for research work. 512 users said they use e-Resources for publication and project work, while only 35 users said they use e-Resources to develop course materials and 52 users said they use e-Resources for self-improvement. Table-4 and figure-4 show the number and percentage of responses aimed at using the e-Resources provided by the library.

Table 4: Number of responses to using e-Resources

S.No.	Purpose of using e-Resources	Respondents	%
1	Study	625	86.80
2	Research Work	415	57.63
3	Development of Course Content/Subject	35	4.86
4	Publication	405	56.25
5	Project work	512	71.11
6	Self-improvement	52	7.22
7	To update current information	2	0.27

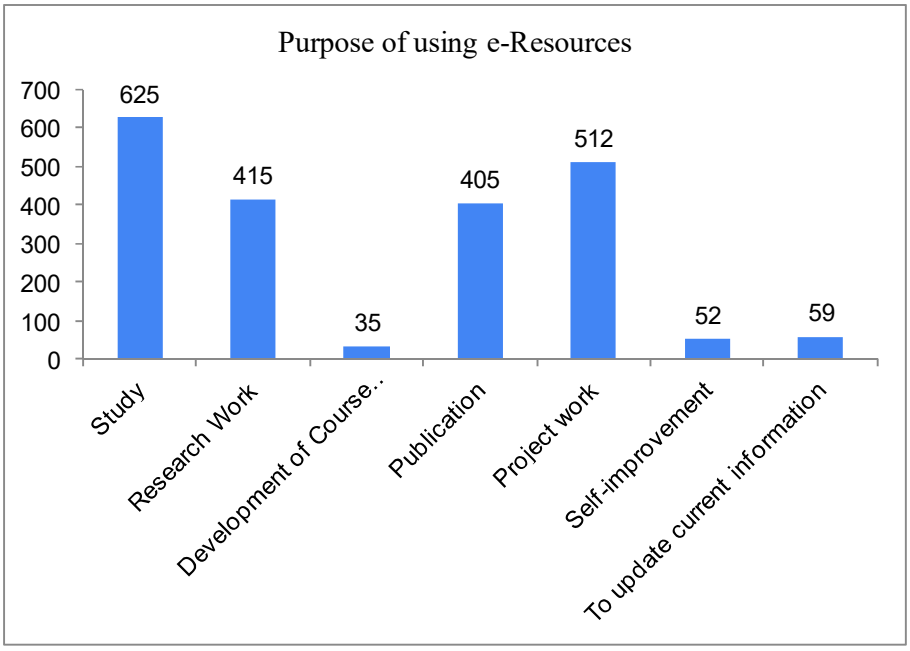

Fig.4: Purpose of using e-Resources

Preferred place used for Accessing e-Resources: The survey sought to find out from the users the preferred location for accessing e-Resources. Out of 720 users, 621 users preferred the library, and 585 users also preferred the departments/cabins. Remote access is also preferred by 437 users. Table-5 and figure-5 given here show the number and percentage of responses for preferred locations to access e-Resources.

Table 5: Number of responses for preferred locations to access e-Resources

S.No.	Preferred place used for Accessing of e-Resources	Respondents	%
1	Library	621	86.25
2	Department/Cabins	585	81.25
3	Departmental Library	125	17.36

4	Home (Remote Access)	437	60.69

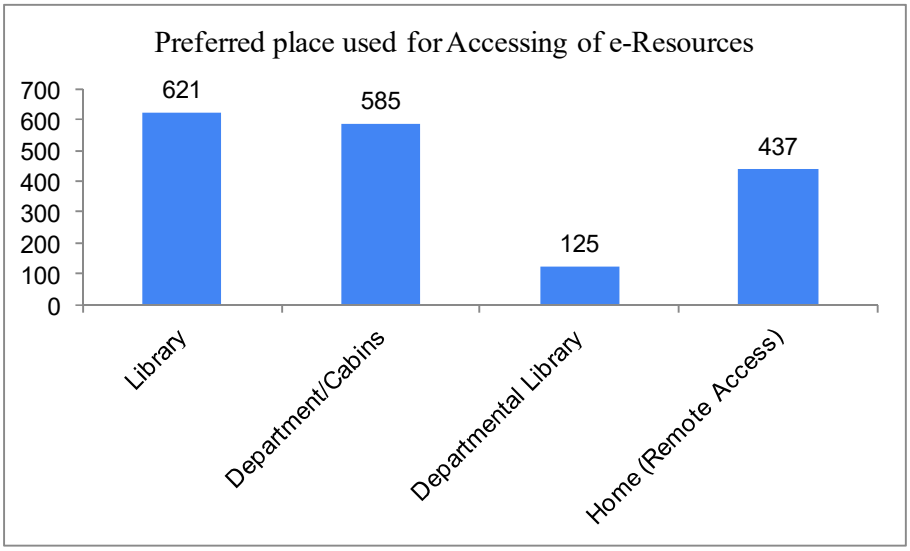

Fig.5: Preferred locations to access e-Resources

Frequency of using e-Resources: This question has been chosen to know the frequency of library users accessing e-Resources. 470 users said they use e-Resources daily, and 385 users said they use e-Resources only once a week. Some users use e-Resources only occasionally. Table-6 and Figure-6 show the number and percentage of the frequency of use of e-Resources.

Table-6 Frequency of using e-Resources

S.No.	Frequency of Using e-Resource	Respondents	%
1	Daily	470	65.27
2	Weekly	385	53.47
3	Monthly	80	11.11
4	Rarely	46	6.38

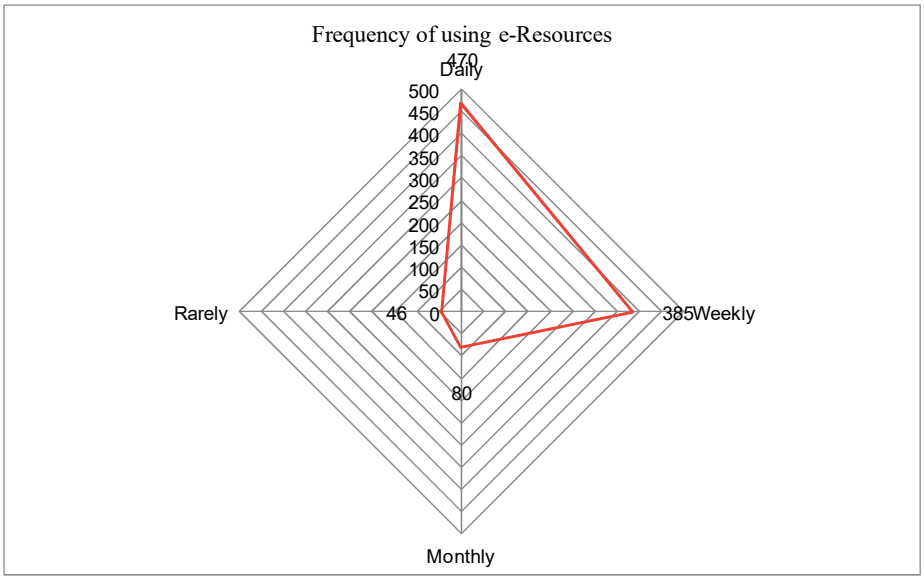

Fig.6: Frequency of using e-Resources

Duration of time per week for using e-Resources: 380 users out of 720 users spend 1 to 5 hours per week accessing e-Resources while 262 users spend 1 to 10 hours per week some users did not answer this question means they do not know how much time they spend accessing e-resources. Overall, about half of users spend time accessing e-Resources almost every day. Table-7 and Figure-7 show the number and percentage of respondents by period per week for using e-Resources.

Table 7: Number of respondents for using e-Resources per week

S.No.	Duration of Time per Week for Using e-Resources	Respondents	%
1	1 to 5 Hours per week	380	52.77
2	1 to 10 Hours per month	262	36.38
3	No Idea	78	10.83

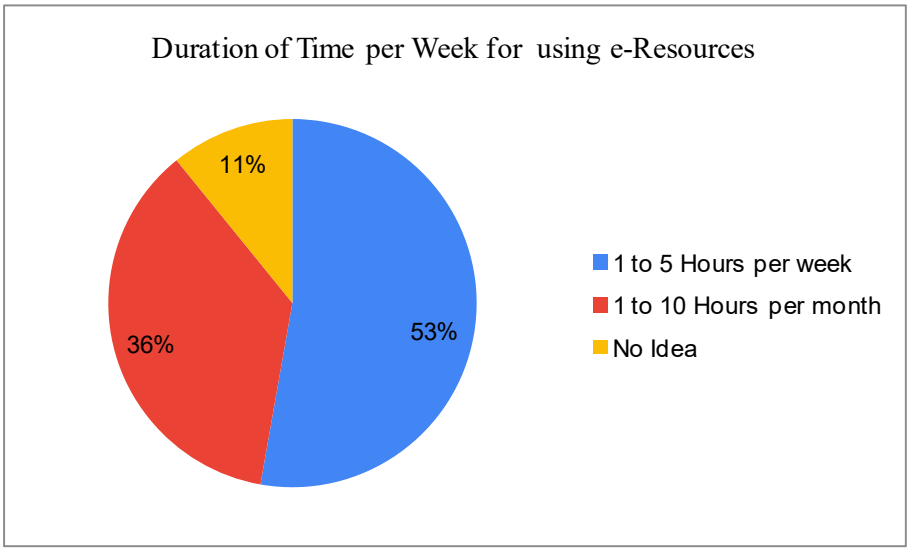

Fig.7: Percentage of respondents for using e-Resources per week.

Advantages of using e-resources: In a survey on benefits of using e-resources, the maximum number of users participated in which the response was mixed, out of which 82.77% users say that e-resources are time saver and can be accessed from anywhere. Table-8 and figure-8 show the number and percentage of respondents to benefit from using e-Resources.

Table 8: Number of respondents advantages for using of e-Resources.

S.No.	Advantages for using of e-Resource	Respondents	%
1	E-Resources can be accessed from anywhere/at any time	596	82.77
2	Easy to download e-Resources	497	69.02
3	Time Saving	483	67.08
4	Keep abreast of the latest information	562	78.05
5	Provision of accurate and current information	564	78.33
6	Share research information with distant colleagues	326	45.27
7	Expedite the research process	308	42.77

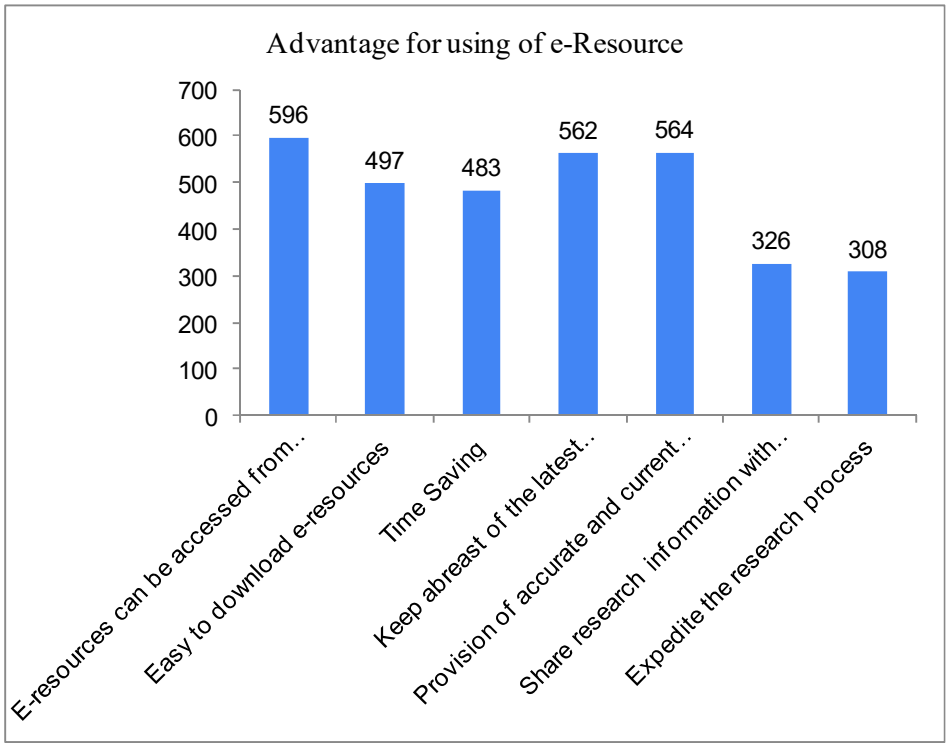

Fig.8: Advantages for using of e-Resource

Difficulties faced while accessing e-Resources: When users were asked what problems they face in accessing e-Resources, most of the users did not participate in this survey, which shows that e-Resources are very easy to access. Those who participated in the survey said that there is no proper supply of electricity and non-availability of e-Resources as per their requirements. A total of 251 users faced difficulties accessing e-Resources while 469 users out of 720 not faced any difficulties during to access of e-Resources.Table-9 and figure-9 show the number and percentage of difficulties of the respondents in accessing e-Resources.

Table 9: Number of difficulties of the respondents in accessing e-Resources

S.No.	Difficulties Faced while Accessing e-Resources	Respondents	%
1	In sufficient related e- Resources	35	4.86
2	Slow internet speed/network connectivity problem	108	15.00
3	Irregular power supply	65	9.02
4	Non -availability of e-Resources relevant to my	8	1.11
5	Lack of knowledge how to access e -Resources	10	1.38
6	Limited number of computers	16	2.22
7	Lack of trained library staff who can't help the users	0	0.00
8	Lack of awareness of available e-Resources	6	.83

9	Lack of IT skills	3	0.41

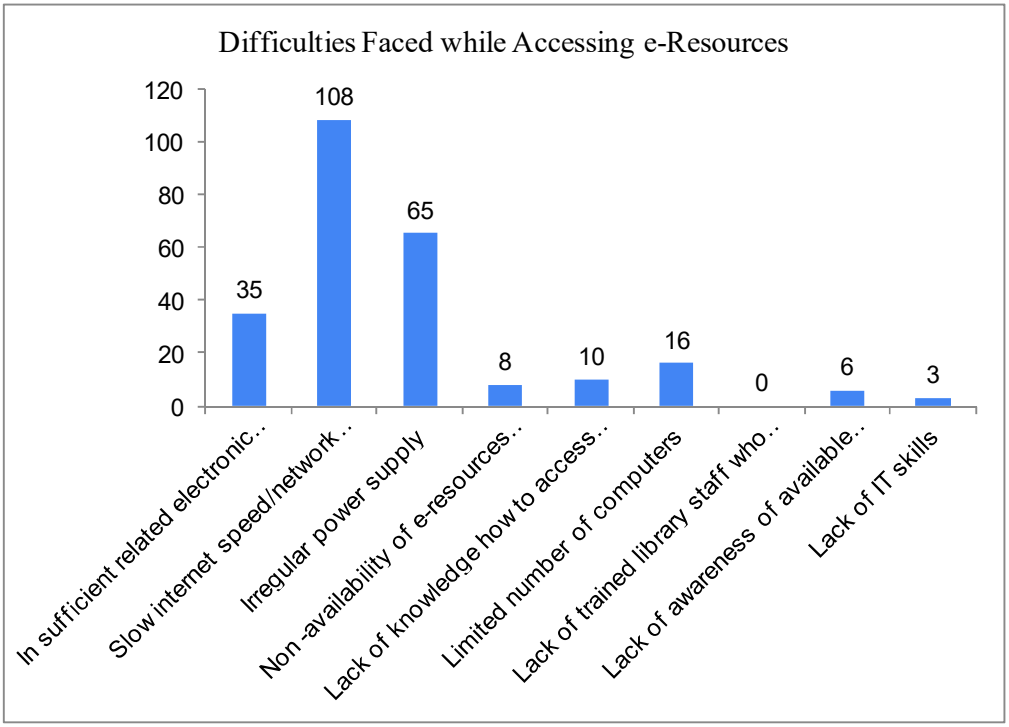

Fig.9: Difficulties of the respondents in accessing e-Resources

5. Conclusion:

- Based on the e-Resources available in the libraries, selected 800 users were selected for search, suggestion, and discussion on the future scope of study and their use as per selected Engineering Colleges of Rajasthan (as per Quality Index Value Rank) located in Jaipur Was. Out of which 720 responses were received. Based on the data analysis, the following conclusions and suggestions were obtained:
- The majority of the users are very satisfied with the e-Resources available in all the libraries, but according to the face-to-face interviews of the faculty members, the libraries should be subscribed to more e-Resources.
- E-Resources are the most used resources in the present digital environment, maximum library users access e-Resources through libraries and facilities available in their department. It has been observed in this study that the remote access facility is used very rarely by users to access e-Resources. Therefore, libraries should organize awareness sessions and training for this so that maximum use of e-Resources can be done.
- Library users have to face the problem of slow internet and network connectivity in accessing e-Resources, so the administration of various libraries should pay more attention to this.

- According to maximum library users, they access daily e-Resources and spend 1 to 5 hours on this, apart from this, users say that the biggest advantage of e-Resources is that they can access e-Resources from anywhere at any time.

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