

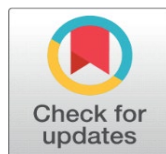


IMPACT OF E-RESOURCES AND DIGITAL LIBRARY EXPLORING TOOLS FOR ENGINEERING COLLEGE STUDENTS UNDER JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

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ABSTRACT

The provided data illustrates the varying levels of demand for different types of information resources within an academic or research context. This analysis offers valuable insights into the preferences and requirements of users when accessing resources. Notably, there is a substantial need for journals in engineering and technology fields, indicating their crucial role in research and academic endeavors. Theses in engineering and technology also receive a high degree of demand, underlining their significance in scholarly work. Moreover, digital resources appear to be of growing importance, with users frequently and highly requiring them. In contrast, government documents, newspapers, and general encyclopedias are less frequently required, indicating a more specialized or focused interest among users. This data underscores the importance of aligning library collections and digital resources with the specific needs of the academic community. By doing so, institutions can ensure that users have access to the resources that are most essential for their research and learning, thereby enhancing the overall quality of academic endeavors.

Keywords: Information Resources, Academic Libraries, Resources Demand, Journals, Theses, Digital Resources

1. INTRODUCTION

In today's fast-paced digital age, the realm of education is undergoing a profound transformation. Traditional educational methods are evolving into dynamic, technology-driven paradigms, and this shift is particularly evident in engineering colleges affiliated with Jawaharlal Nehru Technological University, Kakinada (JNTUK). The pervasive integration of digital tools and electronic

resources (e-resources) is ushering in a new era for engineering education, fundamentally changing how students' access, engage with, and utilize academic materials.

This investigation seeks to explore the impact of digital tools and e-resources within the context of engineering colleges operating under the purview of JNTUK. It aims to uncover the multifaceted effects of these resources on students' educational journeys, shedding light on the advantages, challenges, and evolving trends within this educational landscape. The relevance of this research is underscored by JNTUK's pivotal role in providing high-quality technical education to a vast number of students across its affiliated engineering colleges. With the widespread availability of e-resources, including electronic books, academic journals, databases, and other digital materials, students have access to an unprecedented wealth of knowledge that transcends the confines of traditional libraries.

In the realm of academic and research libraries, the efficient allocation of resources is of paramount importance to meet the dynamic needs of users. Understanding the frequency and degree of necessity for various types of information resources is a fundamental aspect of this endeavor. The data presented herein sheds light on the patterns of demand among users for a diverse range of information resources in an academic context. This analysis offers insights into the preferences and priorities of users within academic libraries, informing critical decisions regarding collection development, resource allocation, and the enhancement of library services. As the digital age continues to reshape the landscape of information access, academic libraries must adapt to meet the evolving requirements of their user base. Recognizing which types of resources are highly sought after and which are less frequently required is integral to achieving an optimal balance in resource allocation. Moreover, these insights guide the development of strategies to ensure that students, researchers, and academics have ready access to the materials that are essential for their scholarly pursuits.

This study intends to discern how these digital tools have reshaped the educational experiences of engineering college students under JNTUK, examining the various ways in which e-resources have become integral components of their academic lives. By exploring the impact of e-resources, we aim to uncover the challenges faced by students, the benefits they derive, and the overall effectiveness of digital tools in facilitating their learning and research endeavors.

In the subsequent sections, we will delve into the research methodology employed for this investigation, conduct an in-depth review of relevant literature, and present our findings. Through this exploration, we aspire to contribute to the ongoing discourse on the evolving landscape of engineering education and offer valuable insights that can inform future strategies for enhancing the educational experiences of engineering students under JNTUK.

2. LITERATURE REVIEW

Engineering college libraries have evolved significantly in response to the digital age, adopting various digital tools and technologies to support the academic needs of students and faculty. This literature review explores key aspects of these digital tools and their impact on library services and resources.

Online catalogs and discovery systems have become central to library services. They enhance the accessibility of resources and enable users to search, locate, and access a vast collection of materials [Abram \(2017\)](#). Modern library catalogs have

transitioned from static listings to dynamic systems that facilitate efficient resource discovery. e-resource databases encompass academic journals, e-books, conference proceedings, and technical reports. These digital resources offer convenience, speed, and remote access [Hawkins \(2017\)](#). They have expanded the scope of available information, allowing users to access current research from anywhere. Institutional digital repositories play a crucial role in preserving and disseminating institutional knowledge. These repositories house the institution's research outputs, theses, and scholarly publications [Muir \(2012\)](#). They promote open access and long-term preservation of intellectual assets.

E-book platforms provide access to digital textbooks, reference materials, and monographs. They offer features such as keyword searching and annotation tools, enhancing the reading and research experience [Luo \(2019\)](#). Citation management tools simplify the process of organizing references and generating citations. They help users maintain accurate records of sources and streamline the citation process in research [Bower \(2016\)](#). Remote access tools like Virtual Private Networks (VPNs) and proxy servers ensure off-campus access to library resources. These tools are essential for enabling users to access e-resources from any location [Shao \(2019\)](#). Data visualization software aids in creating, analyzing, and presenting complex data. It is particularly valuable for engineering disciplines that deal with intricate data sets [Chen \(2018\)](#).

Reference management systems assist users in organizing and citing references, making them valuable assets for researchers and students [Savic \(2019\)](#). Libraries often offer collaborative spaces equipped with digital tools and video conferencing facilities. These spaces facilitate group work and enhance collaborative projects [Dobson \(2017\)](#). Integration with learning management systems ensures seamless access to library resources within the course structure. This integration enhances the learning experience for students [Zhang \(2019\)](#). LibGuides and online tutorials provide guidance on utilizing library resources effectively. They serve as valuable resources for students and faculty seeking to navigate the library's digital landscape [Bergen \(2016\)](#). Digital preservation efforts are essential for safeguarding historical records and rare documents. Libraries engage in these efforts to ensure the long-term accessibility of valuable materials [Kharb \(2021\)](#). Some libraries explore VR and AR technologies to create immersive educational experiences. These technologies aid in visualizing complex engineering concepts and enhance learning [Li \(2020\)](#).

The shift from physical card catalogs to online catalogs and discovery systems has revolutionized how users access library resources. These systems offer intuitive search interfaces and facilitate efficient resource discovery [Miller \(2015\)](#). E-resource databases provide access to a wide range of electronic materials, including journals, e-books, and technical reports. The availability of such databases has expanded the scope of research possibilities for engineering students [Oltmann and Tan \(2014\)](#). Institutional digital repositories play a crucial role in archiving and disseminating scholarly work produced within engineering colleges. They promote open access and long-term preservation of research outputs [Perrin \(2016\)](#). E-book platforms offer students and faculty convenient access to textbooks and reference materials in digital format. Features such as search ability and portability enhance the learning experience [Peters \(2019\)](#).

Citation management tools simplify the process of organizing references and generating citations. They help students and researchers maintain accurate bibliographies [Harris \(2015\)](#). Virtual Private Networks (VPNs) and proxy servers ensure seamless remote access to library resources. These tools have become

essential for off-campus users [Deng \(2016\)](#). Data visualization software aids engineering students in analyzing and presenting complex data. These tools are particularly valuable in fields that rely on data-driven research [Fry et al. \(2017\)](#). Reference management systems assist users in organizing and citing references, streamlining the research process [Bartley \(2017\)](#). Libraries have created collaborative spaces equipped with digital tools to facilitate group work and collaborative projects among students [Henderson and Pigg \(2019\)](#). Integration with learning management systems enhances the integration of library resources into the curriculum, making them readily accessible to students [Sampson and Renner \(2018\)](#).

3. VARIOUS DIGITAL TOOLS FOR LIBRARIES

Engineering college libraries play a pivotal role in facilitating learning, research, and academic excellence within their institutions. In today's digital age, these libraries have evolved to embrace a wide array of digital tools and technologies that enhance the overall educational experience for students and faculty members. This article explores some of the diverse digital tools that have become integral components of modern engineering college libraries, supporting their mission to provide comprehensive resources and services.

- **Online Catalogs and Discovery Systems**

Library catalogs have transitioned from traditional card catalogs to sophisticated online systems. Discovery tools enable users to search, locate, and access a vast collection of print and electronic resources seamlessly.

- **E-Resource Databases**

Engineering libraries subscribe to a plethora of electronic databases encompassing academic journals, e-books, conference proceedings, and technical reports. These databases offer easy access to a wealth of research materials.

- **Digital Repositories**

Many engineering colleges maintain digital repositories that house institutional research outputs, theses, dissertations, and scholarly publications. These repositories promote open access to knowledge generated within the institution.

- **E-Book Platforms**

E-book platforms provide students and faculty with access to digital textbooks, reference materials, and monographs, allowing for convenient reading and research on various devices.

- **Citation Management Software**

Citation management tools help users organize references, generate citations, and create bibliographies. They are invaluable for engineering students and researchers in maintaining accurate records of their sources.

- **Remote Access Tools**

Virtual Private Networks (VPNs) and proxy servers enable off-campus access to library resources, ensuring that students and faculty can use e-resources from anywhere.

- **Data Visualization Tools**

Libraries offer data visualization software to help students and researchers create, analyze, and present data effectively. These tools are particularly beneficial for engineering disciplines that deal with complex data sets.

- **Reference Management Systems**

Reference management systems like Zotero, EndNote, and Mendeley assist users in organizing and citing references, streamlining the research process.

- **Collaborative Workspaces**

Libraries often provide collaborative spaces equipped with digital tools, interactive whiteboards, and video conferencing facilities to facilitate group work and projects.

- **Learning Management System Integration**

Integration with the institution's learning management system (e.g., Moodle, Blackboard) allows seamless access to library resources and services within the course structure.

- **Digital Archive Preservation**

Libraries engage in digital preservation efforts to safeguard historical records, manuscripts, and rare documents, ensuring their long-term accessibility.

- **Virtual Reality (VR) and Augmented Reality (AR)**

Some libraries explore VR and AR technologies to create immersive educational experiences, particularly useful for engineering students in visualizing complex concepts.

Incorporating these digital tools into engineering college libraries enhances the learning, research, and collaboration experiences of students and faculty. As technology continues to advance, these libraries remain at the forefront of innovation, adapting to meet the evolving needs of their academic communities.

4. IMPORTANCE OF DIGITAL TOOLS FOR ENGINEERING STUDENTS

The importance of digital tools for engineering students is undeniable in today's rapidly evolving educational landscape. These tools offer a wide range of benefits that enhance the learning experience and prepare students for successful careers in engineering. Below are some key points highlighting the significance of digital tools for engineering students:

- 1) Access to Vast Resources:** Digital tools provide access to a wealth of online resources, including e-books, academic journals, research databases, and multimedia materials. This access allows engineering students to explore a diverse range of information, keeping them up-to-date with the latest developments in their field.
- 2) Efficient Information Retrieval:** Search engines, online libraries, and databases equipped with advanced search functionalities enable students to quickly and efficiently locate relevant research papers, articles, and reference materials. This saves valuable time and improves research productivity.
- 3) Enhanced Learning:** Digital tools often include multimedia elements such as videos, simulations, and interactive tutorials. These resources can significantly enhance the learning experience by providing visual and interactive explanations of complex engineering concepts.
- 4) Collaborative Opportunities:** Many digital tools facilitate collaboration among students through features like shared documents, online forums, and video conferencing. These collaborative experiences prepare students for teamwork, a critical aspect of engineering projects in the real world.

- 5) **Remote Learning:** Digital tools support remote learning, allowing students to access course materials and engage in discussions from anywhere with an internet connection. This flexibility is especially valuable during circumstances such as pandemics or for students who need to balance work and education.
- 6) **Real-world Skills Development:** Engineering students often use digital design software, data analysis tools, and programming environments that mimic industry-standard software. Familiarity with these tools during their education makes them more competitive in the job market.
- 7) **Data Analysis and Modeling:** Digital tools enable engineering students to work with large datasets, conduct simulations, and create complex engineering models. These skills are essential for solving real-world engineering problems.
- 8) **Interdisciplinary Learning:** Engineering projects frequently involve collaboration with experts from various fields. Digital tools can facilitate interdisciplinary communication and collaboration, fostering a holistic approach to problem-solving.
- 9) **Customization and Personalization:** Some digital tools allow students to tailor their learning experience by creating personalized libraries, bookmarks, and notes. This adaptability helps them organize and revisit important materials effectively.
- 10) **Global Connectivity:** Digital tools connect engineering students to a global network of peers, researchers, and professionals. This exposure to a broader community can lead to valuable networking opportunities and a deeper understanding of global engineering challenges.
- 11) **Cost Savings:** Using digital textbooks and resources can be more cost-effective than purchasing physical copies. This cost savings can alleviate some financial burdens on engineering students.

5. IMPACT OF DIGITAL TOOLS TO ACCESS E-RESOURCES

The impact of digital tools on accessing e-resources has been profound, reshaping the way students, researchers, and academics engage with scholarly materials. Firstly, these tools have brought about unparalleled accessibility and convenience. The shift from physical libraries to digital repositories means that users can access a vast array of e-resources from the comfort of their computers or mobile devices. This 24/7 availability transcends geographical boundaries, allowing students and researchers worldwide to access valuable information with unprecedented ease.

Secondly, digital tools have revolutionized search and discovery. Advanced search algorithms and user-friendly interfaces have made it possible to pinpoint specific e-resources efficiently. Boolean operators, filters, and relevance ranking have become standard features, enabling users to find precisely what they need in a fraction of the time it would have taken through traditional methods. This efficiency is especially crucial for researchers who need to navigate vast databases of scholarly materials.

One of the most transformative impacts of digital tools is the ability to access e-resources remotely. Virtual Private Networks (VPNs), proxy servers, and Single Sign-On (SSO) systems have made it possible for students and researchers to retrieve e-resources from anywhere, whether they are on or off-campus. This

capability has become particularly invaluable during times of crisis, such as the COVID-19 pandemic, ensuring that academic pursuits can continue unhindered.

Moreover, digital tools have introduced a new level of personalization and user-friendliness. Users can create profiles, save searches, and set up alerts for new content. This customization tailors the e-resource experience to individual needs and preferences. It not only enhances efficiency but also empowers users to curate their digital libraries, making the research process more organized and efficient.

Collaboration and sharing have also been greatly facilitated by digital tools. Researchers and students can seamlessly collaborate on projects by sharing e-resources, annotations, and notes. Online forums and discussion boards further enhance this collaborative experience, fostering a sense of community among scholars.

Interactive learning materials have become increasingly prevalent within e-resources, especially in fields like engineering, where visual representation is crucial. These materials include multimedia presentations, simulations, and interactive quizzes that significantly enhance the learning experience. They provide a dynamic and engaging way for students to grasp complex concepts and apply their knowledge.

Furthermore, real-time updates from e-resource databases and digital journals ensure that users stay current in their fields. They can access the latest research findings, news articles, and publications without delay, contributing to more informed decision-making and research outcomes.

Digital tools also play a pivotal role in collecting and analyzing usage statistics. Libraries and institutions can gain valuable insights into how e-resources are being utilized. This data informs resource allocation decisions, helping libraries tailor their collections to the evolving needs of their user base.

Lastly, the integration of digital tools with Learning Management Systems (LMS) in educational institutions streamlines the learning process. Students can access e-resources directly from their courses, ensuring that required readings and materials are readily available. This integration fosters a seamless learning experience, where access to e-resources is seamlessly integrated into the educational journey.

In summary, digital tools have transformed the landscape of accessing e-resources, offering unparalleled accessibility, efficiency, and collaboration opportunities. They have made scholarly materials more accessible to a global audience, personalized the learning experience, and enriched it with interactive elements. Furthermore, they have empowered users to stay informed with real-time updates and have aided institutions in data-driven decision-making.

6. RESULTS AND ANALYSIS

This module describes about the nature of information resources required. At first the classification of respondents based on nature of information resources required is tabulated [Table 1](#). In summary, the data presented reveals the varying degrees of necessity for different types of information resources in an academic or research context. It reflects the diverse needs of users, ranging from reference materials, journals, and periodicals to books, theses, audio/video recordings, and government documents. Some key takeaways include the high demand for journals and theses, particularly in engineering and technology fields. Users highly require access to these resources for their research and academic pursuits. Additionally, the importance of digital resources is evident, with users frequently and highly

requiring them. Interestingly, government documents, newspapers, and general encyclopedias are less frequently required, suggesting a more specialized focus among users. However, it's crucial to note that there is still occasional demand for these resources. Overall, this data underscores the importance of tailoring library collections and digital resources to meet the diverse and evolving needs of users, ensuring that they have access to the materials essential for their academic and research endeavors.

Table 1

Table 1 Classification of Student Respondents Based on Nature of Information Resources Required											
S. No	Type of information resource	Not required	%	Rarely required	%	Occasionally	%	Frequently required	%	Highly required	%
1	Review of Reference Materials (Dictionaries, Encyclopaedias etc.)	40	6	83	12.5	102	15.4	182	27.4	257	38.7
2	Journals other than Engineering and Technology	42	6.3	62	9.34	170	25.6	61	9.19	329	49.55
3	Periodicals other than Engineering & Technology	17	2.6	80	12.1	206	31	40	6.02	321	48.34
4	Engineering and Technology books	13	2	54	8.13	141	21.2	90	13.6	366	55.12
5	General Books other than Engineering & Technology	32	4.8	245	36.9	41	6.17	92	13.9	254	38.25
6	General Encyclopaedia, Reports, Yearbooks etc.,	155	0	105	15.8	102	15.4	62	9.34	240	36.14
7	Theses in Engineering and Technology	14	0	44	6.63	82	12.4	149	22.4	375	56.48
8	These other than Engineering / Technology	82	0	147	22.1	83	12.5	29	4.37	323	48.64
9	Audio / Video Recordings	79	0	74	11.1	76	11.5	45	6.78	390	58.73
10	Book Reviews	55	0	87	13.1	35	5.27	15	2.26	472	71.08
11	Government Documents	104	0	289	43.5	61	9.19	0	0	210	31.63
12	News Papers	131	0	73	11	118	17.8	18	2.71	324	48.8
13	Others	12	0	423	63.7	14	2.11	14	2.11	201	30.27

This module describes about the student respondent's motivation aspect to seek and collect information. There are various reasons to collect the information for the academic purpose and libraries are the best places where everybody can enrich their knowledge through the information resources available both in book form and non-book material and digital form. Classification of respondents based on motivation aspect to seek and collect information by the student respondents is tabulated in [Table 2](#) . One of the standout findings is the significant motivation to prepare for class. Nearly half of the respondents view this as an essential aspect, with a substantial portion considering it an average to strong motivator. This

underscores the crucial role of information acquisition in supporting academic coursework and ensuring preparedness for classroom activities. In the realm of research and projects, the dataset highlights a compelling trend. Seeking information to perform research projects emerges as a dominant motivator, with a substantial number of respondents categorizing it as the strongest motivator. This reaffirms the fundamental connection between information access and the success of research endeavors, emphasizing the need for robust research resources. Participation in academic events such as seminars and conferences is another notable motivation aspect. A significant number of respondents consider it an average to strong motivator, signifying the importance of up-to-date and relevant information in active scholarly engagement. This finding underscores the role of information in fostering academic collaboration and knowledge dissemination.

Career advancement and promotional opportunities also feature prominently as motivations for information seeking. A substantial portion of respondents views this aspect as an average to strong motivator, indicating that individuals recognize the direct link between information acquisition, knowledge enrichment, and professional growth. This highlights the practical implications of information access in career development. Furthermore, the intrinsic motivation to improve knowledge is evident in the dataset. Many respondents categorize this as a strong motivator, reflecting the innate curiosity and desire for learning among individuals in academic and research settings. This underscores the broader role of information resources in nurturing intellectual curiosity and lifelong learning. Scholarly publishing is another significant motivation aspect, with a substantial number of respondents rating it as an average to strong motivator. This finding emphasizes the pivotal role of information in contributing to the academic discourse, supporting the dissemination of knowledge, and fostering academic scholarship. Lastly, the motivation to prepare for exams through information acquisition exhibits variability, with a notable portion of respondents considering it an average to strong motivator. This underscores the significance of targeted information in achieving academic success and performance in examinations.

Table 2

Table 2 Classification of Student Respondents Based on Motivation Aspect to Seek and Collect Information											
S. No	Motivation aspects for seeking and collecting information	Non motivator	%	Weakest motivator	%	Average motivator	%	Fairly motivator	%	Strongest motivator	%
1	To Prepare for class	297	45	129	19.43	132	19.88	45	6.78	61	9.19
2	To perform project / Research	137	21	23	3.46	67	10.09	126	19	311	46.84
3	For participation in Seminars/ Conferences etc.	87	13	111	16.72	203	30.57	67	10.1	196	29.52
4	To increase promotional opportunities	278	42	126	18.98	92	13.86	56	8.43	112	16.87
5	To improve knowledge	108	16	167	25.15	67	10.09	98	14.8	224	33.73
6	To write and publish papers	77	0	123	18.52	178	26.81	101	15.2	185	27.86

7	To prepare material related to exam	62	0	36	5.42	187	28.16	192	28.9	187	28.16
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This module describes about the respondents based on type of informal and interpersonal sources used by the student respondents is tabulated in Table 3. There are various reasons to use the information and interpersonal sources. It may differ from the user perspective. The different informal and interpersonal sources are Consulting other Scholars in the subject concerned, Consulting Colleagues & fellow Professionals, Results of one's/own and experience, Results of one's/own and experience, Consulting Library Staff/Catalogues, and Hearing Speeches of subject experts. One notable finding is the strong reliance on consulting other scholars in the subject concerned. A significant proportion of respondents indicated a high dependency on this source, with nearly 39.16% considering it highly dependable. This underscores the value of academic collaboration and the exchange of knowledge among peers in the same field.

Similarly, consulting colleagues and fellow professionals emerges as another substantial source of information dependency. Approximately 30.57% of respondents noted frequent reliance on colleagues, indicating the importance of interpersonal networks in information exchange and problem-solving within professional circles. The dataset also highlights the role of personal experience and one's own results as a source of information. A significant portion of respondents, around 30.27%, frequently draw upon their own experiences and findings. This demonstrates the trust individuals place in their own expertise and the value they attribute to practical knowledge gained through hands-on experience. Library staff and catalogues also play a significant role as information sources, with approximately 30.27% of respondents frequently relying on them. This suggests that individuals value the expertise and resources provided by libraries and librarians in their information-seeking endeavors. Moreover, hearing speeches and insights from subject experts is yet another notable source of information. About 30.12% of respondents frequently rely on speeches, highlighting the significance of expert opinions and thought leadership in shaping their knowledge and decision-making processes.

Table 3

Table 3 Classification of Student Respondents Based on Type of Informal and Interpersonal Sources Used											
S. No	Type of Informal and Interpersonal Sources	Dependency level									
		No	%	Rarely	%	Occasionally	%	Frequently	%	Highly	%
1	Consulting other Scholars in the subject concerned	98	14.76	102	15.36	67	10.09	137	20.63	260	39.16
2	Consulting Colleagues & fellow Professionals	72	10.84	137	20.63	203	30.57	145	21.84	107	16.11
3	Results of one's/own and experience	89	13.4	201	30.27	124	18.67	141	21.23	109	16.42
4	Consulting Library Staff/Catalogues	33	4.97	89	13.4	178	26.81	201	30.27	163	24.55
5	Hearing Speeches of subject experts	67	10.09	29	4.37	200	30.12	138	20.78	230	34.64

The classification of student respondents based on extent of using library services by the student respondent while using e-resources is tabulated in [Table 4](#) . It is noticed that students are using library resources for different purposes. Borrowing of books emerges as one of the most extensively used library services, with a significant 73.94% of respondents indicating complete usage. This underscores the continued importance of physical book collections in libraries, as patrons rely on them for academic, research, and leisure reading. Reference services and bibliographic services also stand out, with 47.59% and 54.81% of respondents, respectively, using these services completely. These findings highlight the crucial role that librarians and library resources play in aiding patrons in their research and information-seeking endeavors. The dataset also reveals interesting insights into contemporary library services. Internet searching, for instance, sees substantial usage, with 47.89% of respondents indicating complete reliance. This reflects the increasing significance of digital resources and the role of libraries in facilitating online research. Current awareness services, interlibrary loans, and reprographic services demonstrate a varied pattern of usage, with a mix of marginally, substantially, and completely utilized responses. This variability suggests that while some patrons heavily depend on these services, others may not require them to the same extent. Additionally, the dataset highlights the importance of specialized services such as translation and selective dissemination of information (SDI). These services are used to varying degrees, indicating that libraries cater to a diverse audience with diverse language and information needs.

Table 4

Table 4 Classification of Student Respondents Based on Extent of Using Library Services							
S. No	Services used	Marginally	Percentage (%)	Substantially	Percentage (%)	Completely	Percentage (%)
1	Borrowing of Books	46	6.93	127	19.13	491	73.94
2	Reference Services	78	11.75	270	40.66	316	47.59
3	Bibliographic Service	125	18.83	175	26.36	364	54.81
4	Current awareness Service	355	53.46	114	17.17	195	29.37
5	Inter Library Loan (ILL)	155	23.34	170	25.6	339	51.06
6	Reprographic Service	109	16.42	215	32.38	340	51.2
7	Journals/Periodicals Circulation	84	12.65	224	33.73	356	53.62
8	Internet Searching	135	20.33	211	31.78	318	47.89
9	Translation Service	102	15.36	180	27.11	382	57.53
10	Selective dissemination of information (SDI)	56	8.43	291	43.83	317	47.74
11	Other Services, if any please specify	151	22.74	136	20.48	377	56.78

E-Resource collection

The classification of student respondents based on the status of priority about the location of accessing e-resources is tabulated in [Table 5](#) . From this table, it is observed that the highest priority giving to accessing e-resources by the student respondents in Library 432(65.06%), in Department 304(45.78%), Residence/Hostel 248(37.35%), Campus browsing centre 154(23.19%) and others

46(6.93%). The variation of respondents based on status of priority about the location of accessing e-resources collections shown in Figure 1.

Table 5

Table 5 Classification of Student Respondents Based on the Status of Priority About the Location of Accessing E-Resources

S. No	Location of access	Number of respondents	Percentage
1	Library	432	65.06
2	Residence/Hostel	248	37.35
3	Department	304	45.78
4	Campus browsing centre	154	23.19
5	Others	46	6.93

Figure 1

Classification based on location of accessing e-resources

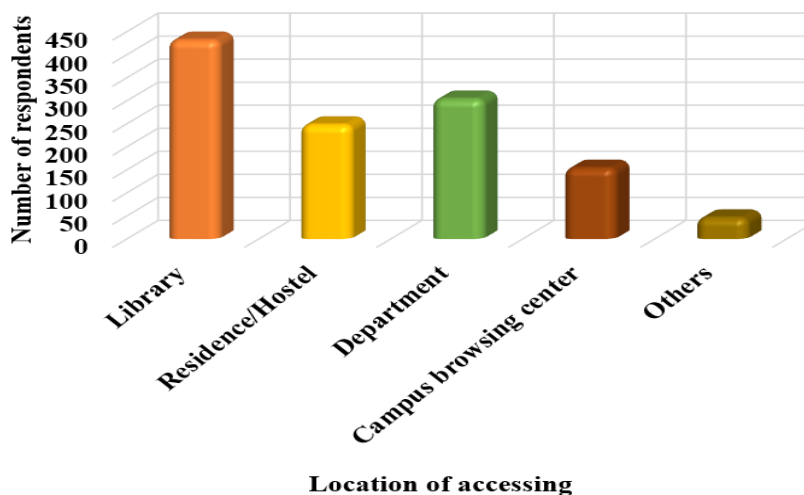


Figure 1 Variation of Student Respondents Based on Status of Priority About the Location of Accessing E-Resources Collection

The classification of student respondents based on the status of priority about the purpose of accessing e-resources is tabulated in Table 6. From this table, it is observed that the highest priority giving to accessing e-resources is for research purpose 467(70.33%), followed by Publication 391 (58.89%), Self-improvement 270(40.66%), Seminar/Workshop presentation 264 (39.76%), Teaching 176(26.51%), and others 78(11.75%). The variation of respondents based on status of priority about the purpose of accessing e-resources is shown in Figure 2.

Table 6

Table 6 Classification of Student Respondents Based on Status of Priority About the Purpose of Accessing E-Resources

S. No	Purpose	Number of respondents	Percentage (%)
1	Teaching	176	26.51
2	Research	467	70.33
3	Publication	391	58.89
4	Self-improvement	270	40.66

5	Seminar/Workshop presentation	264	39.76
6	Others	78	11.75

Figure 2

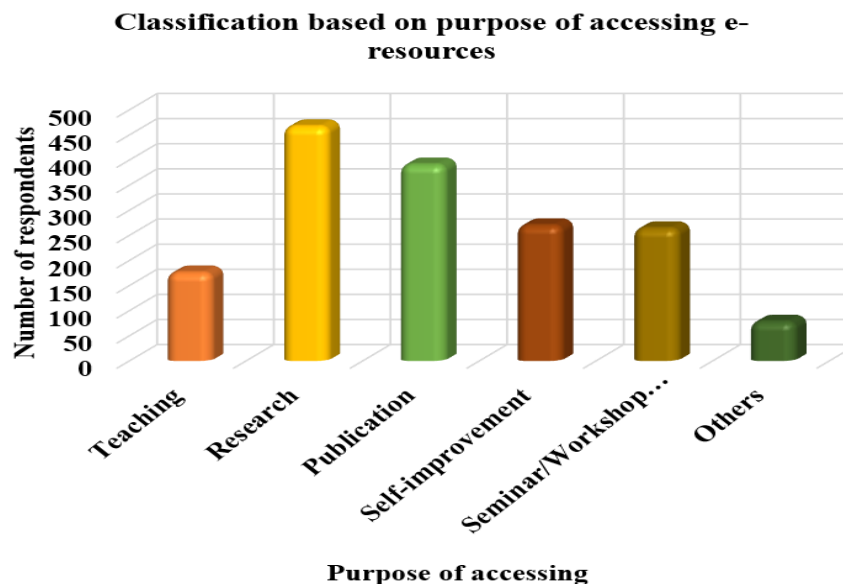


Figure 2 Variation of Student Respondents Based on Purpose of Accessing E-Resources

E-resources are very essential for the academic as well as the research purpose in Educational Institutions. Most of the responded college libraries are facilitating different types of e-resources i.e., CD-ROM Titles, e-Database, e-Journals, e-Reports, e-Content pages, e-Clippings, e-Books and in other forms. Classification of respondents based on types of e-resources used are tabulated in the Table 7 . It is observed that the usage of e-journals/magazines 542(81.63%), next comes to e-learning materials523(78.77%), E-books 436 (65.66%), followed by e-newspapers 378(56.93%), e-research reports 345(51.96%), e-reference sources 314(47.29%), Abstracting and indexing databases 156(23.49%), and others 120(18.07%). The variation of respondents based on the types of e-resources used by the student respondents are shown in Figure 3.

Table 7

Table 7 Status of Priority About the Type of E-Resources Used			
S. No	Type of e-resource	Number of respondents	Percentage (%)
1	e-books	436	65.66
2	e-research reports	345	51.96
3	e-learning materials	523	78.77
4	e-reference sources	314	47.29
5	e-journals/magazines	542	81.63
6	e-thesis & dissertations	98	14.76
7	Abstracting and indexing databases	156	23.49
8	e-news papers	378	56.93
9	Others	120	18.07

This module describes about the status of priority about the criteria of using e-resources. At first, the status of priority Status of priority about the criteria of using e-resources is classified into 6 different types given in Table 8 , most of the student respondents giving priority for using e-resources for easy access 521(78.46%), followed by Reliability 376 (56.63%), More information 298(44.88%), Speed of access241(36.3%), Currency 120(18.07%), and others 98(14.76%). Classification based on Status of priority about the criteria of using e-resources by the responded student respondents s is tabulated in Table 6 and the variation is shown in Figure 4.

Figure 3

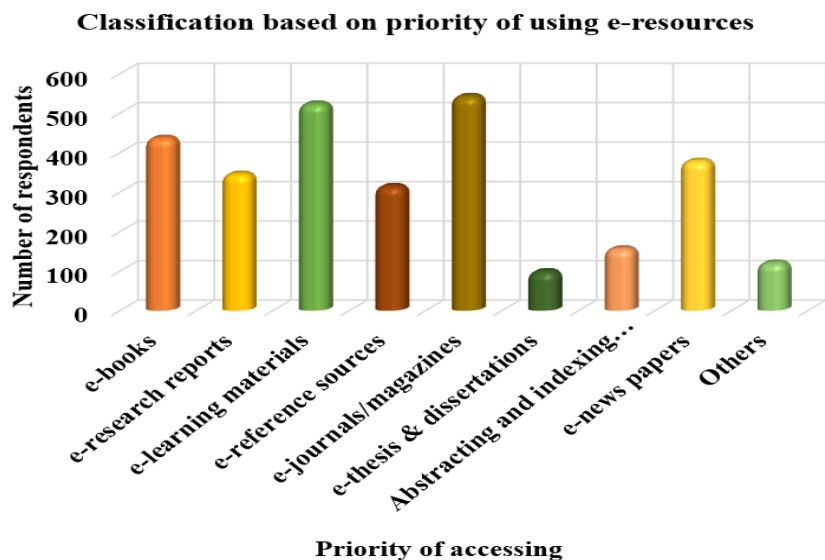


Figure 3 Variation of Student Respondents Based on Priority of Using E-Resources

Table 8

Table 8 Status of Priority About the Criteria of Using E-Resources			
S.No	Criterion	Number of respondents	Percentage (%)
1	More information	298	44.88
2	Speed of access	241	36.3
3	Easy access	521	78.46
4	Reliability	376	56.63
5	Currency	120	18.07
6	Others	98	14.76

This module describes about the status of priority about the searching mechanism for accessing e-resources. At first, the Status of priority about the searching mechanism for accessing e-resources classified into different categories given in Table 9 . From this table it is identified that most of the student respondents giving priority to search the e-resources is search engine 597(89.91%) next comes to Library portals278 (41.87%), Subject gateways 172(25.9%), Inter library resources 103(15.51%), and other 176 (26.51%).

Table 9

Table 9 Status of Priority About the Searching Mechanism for Accessing E-Resources			
S. No	Searching mechanism	Number of respondents	Percentage (%)
1	Search engine	597	89.91
2	Subject gateways	172	25.9
3	Library portals	278	41.87
4	Inter library resources	103	15.51
5	Others	176	26.51

The classification of student respondents based on Status of priority about the problems experienced while using e-resources is tabulated in [Table 10](#). In this table it is noticed that while using e-resources what are the problems experienced by the student is classified into six divisions Inadequate infrastructure facilities, very short time to access, Power failure, Internet speed is less, Poor personal assistance and other Experiences while using e-resources. it is noticed that the main problem experienced while using e- resources by the students are Inadequate infrastructure facilities 317 (47.74%), followed by very short time to access 211(31.78%), Poor personal assistance 203(30.57%), Internet speed is less 181(27.26%), Power failure 76(11.45%), and others 123(18.52%). The variation of student respondents based on their priority about to problems experienced while using e-resources is shown in [Figure 5](#).

Table 10

Table 10 Status of Priority About the Problems Experienced While Using E-Resources			
S. No	Problem description	Number of respondents	Percentage (%)
1	Inadequate infrastructure facilities	317	47.74
2	Very short time to access	211	31.78
3	Power failure	76	11.45
4	Internet speed is less	181	27.26
5	Poor personal assistance	203	30.57
6	Others	123	18.52

The classification of student respondents based on priority about the preference to access online journals tabulated in [Table 11](#). In this table, the priority given by the student respondents to use the online journals in the library. it is noticed that the preference was classified into 6 priorities that is using of Library websites, Publisher websites, Consortia provider websites, Aggregators/vendors sites, Directories, and other sources to access online journals by the student respondents. It is found that most of the students are depend on Publisher websites 479(72.14%), followed by Directories 372 (56.02%), Consortia provider websites 251(37.8%), Aggregators/vendors sites 208(31.33%), Library websites 176 (26.51%), and other resources to access online journals. The variation of student respondents based on their priority given to access online journals is shown in [Figure 4](#).

Table 11

Table 11 Status of Priority About the Preference to Access Online Journals			
S. No	Preferences	Number of respondents	Percentage (%)
1	Library websites	176	26.51
2	Publisher websites	479	72.14
3	Consortia provider websites	251	37.8

4	Aggregators/vendors sites	208	31.33
5	Directories	372	56.02
6	Others	138	20.78

Figure 4

Classification based on preference to access online journals

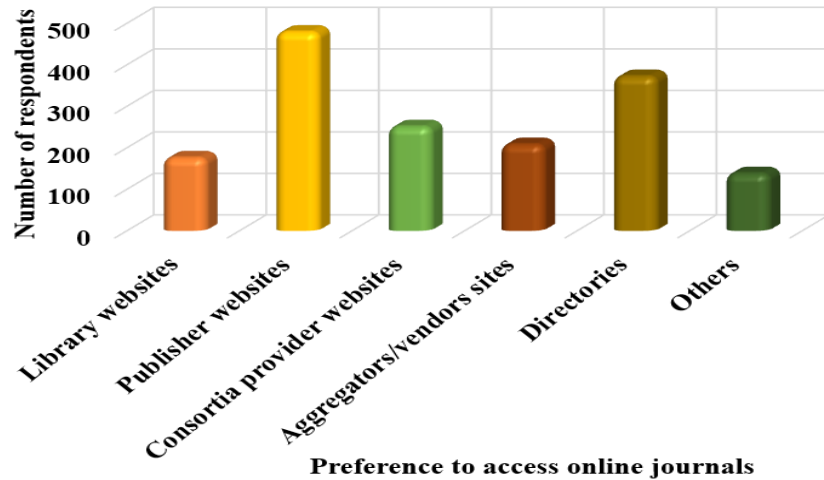


Figure 4 Variation of Student Respondents Based on Preference to Access Online Journals

This module describes about the status of priority about the advantages in accessing e-resources. At first, the status of priority about the advantages in accessing e-resources by the student respondents is tabulated in Table 12. From this table, it is identified that 578(87.05%) are spending less time in searching e-resources, where as Availability of the journal much before the printed copy 473 (71.23%), Simultaneous usage 389 (58.58%), Easy accessibility 508 (76.51%), Downloading facility 381 (57.38%), Author can be contacted directly through e-mail 203 (30.57%), Archival facility 239 (35.99%), Others 126(18.98%). The variation of student respondents based on status of priority about the advantages in accessing e-resources is shown in Figure 5.

Table 12

Table 11 Status of Priority About the Advantages in Accessing E-Resources			
S. No	Advantages	Number of respondents	Percentage (%)
1	Less time in searching	578	87.05
2	Availability of the journal much before the printed copy	473	71.23
3	Simultaneous usage	389	58.58
4	Easy accessibility	508	76.51
5	Downloading facility	381	57.38
6	Author can be contacted directly through e-mail	203	30.57
7	Archival facility	239	35.99
8	Others	126	18.98

Figure 5

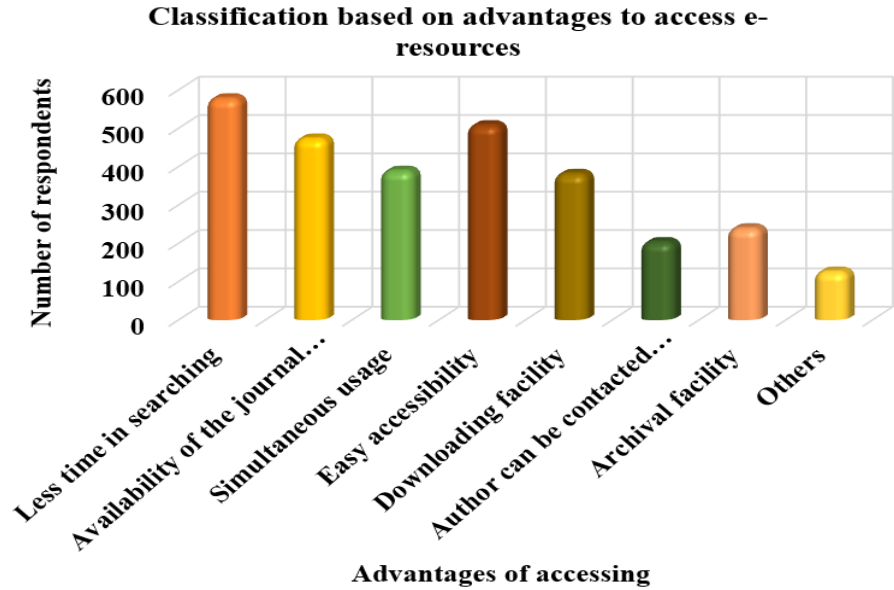


Figure 5 Variation of Student Respondents Based on Advantages to Access E-Resources

This module describes about the status of priority about the difficulties faced in accessing the information. Classification of student respondents based on status of priority about the difficulties faced in accessing the information by the responded student respondents is tabulated in Table 13 . At first, the status of priority Status of priority about the difficulties faced in accessing the information is classified into 5 different types majority of the student respondents facing difficulty because of Instability of networks 402(60.54%), Broken links348 (52.41%), Language barriers291(43.83%), Information overload274 (41.27%) and Others 105(15.81%).

Table 13

S. No	Difficulties faced	Number of respondents	Percentage (%)
1	Language barriers	291	43.83
2	Broken links	348	52.41
3	Instability of networks	402	60.54
4	Information overload	274	41.27
5	Others	105	15.81

This module describes about the reasons for not satisfying with the e-resources in the student responded colleges. At first the reason for not satisfied by the student respondents with the e-resources provided by the responded colleges are tabulated in Table 14. it is articulated that the high level of dissatisfaction because of Insufficient e-resources 408(61.45%), followed by Failure of hardware & software affect the functioning of e-resources section 306(46.08%), Lack of proper e-resources 301(45.33%) Lack of portability in contrast with original Print materials 293 (44.13%), Technical problems 278 (41.87%), Lack of proper guidance 214 (32.23%), Lack of printing facilities 207 (31.17%), Lack of knowledge about tools & technologies used for searching and retrieving of e-resources 164 (24.7%), Less opening time 137 (20.63%) Charges to access e-resources 98(14.76%). From the

below table it is find that student dissatisfaction level is high due to insufficient e-resources in the responded colleges, it is very essential to provide e-resources for the students for their academic and research purpose.

Table 14

Table 13 Status of Priority About the Reasons for Not Satisfying with the E-Resources			
S. No	Reasons	Number of respondents	Percentage (%)
1	Less opening time	137	20.63
2	Charges to access e-resources	98	14.76
3	Lack of proper guidance	214	32.23
4	Lack of proper e-resources	301	45.33
5	Lack of printing facilities	207	31.17
6	Insufficient e-resources	408	61.45
7	Technical problems	278	41.87
8	Lack of portability in contrast with original Print materials	293	44.13
9	Failure of hardware & software affect the functioning of e-resources section	306	46.08
10	Lack of knowledge about tools & technologies used for searching and retrieving of e-resources	164	24.7

7. CONCLUSION

In conclusion, the analysis of library service utilization data provides valuable insights into the extent to which patrons rely on various services offered by libraries. The findings underscore the enduring importance of traditional services such as borrowing books, reference assistance, and bibliographic support. These services continue to be highly utilized, with a significant portion of respondents indicating complete reliance. This reaffirms the vital role of libraries in facilitating access to physical and reference materials, assisting users in their research, and enhancing their overall library experience.

Furthermore, the dataset reveals the evolving nature of library services in the digital age. Internet searching emerges as a service of substantial usage, highlighting the contemporary significance of online resources and the pivotal role of libraries in guiding patrons in their online research endeavours. This reflects the adaptability of libraries in embracing new technologies to meet the changing information needs of users.

However, the variable patterns of usage observed for services like current awareness, interlibrary loans, and reprographic services suggest that while these services are essential for some patrons, others may not rely on them as extensively. This underscores the importance of tailoring library services to cater to the diverse needs and preferences of the user community.

8. FUTURE SCOPE

The dataset's findings open up several avenues for future research and improvement of library services. Firstly, libraries can further explore the integration of digital resources and services, considering the substantial usage of internet searching. Enhancing online search capabilities, providing access to a broader range of digital materials, and offering guidance on digital literacy can enhance the

library's role in the digital age. Additionally, understanding the factors influencing the utilization of certain services can guide targeted interventions. Future research could delve deeper into why some patrons marginally use specific services, potentially identifying barriers or unmet needs that can be addressed to increase utilization.

Furthermore, as libraries continue to evolve, assessing user satisfaction and feedback regarding the quality and effectiveness of services is crucial. Implementing user-centric approaches, conducting regular surveys, and engaging in continuous improvement efforts can ensure that libraries remain dynamic and responsive to the changing needs of their patrons. Overall, this dataset provides a foundation for ongoing research and enhancements in library services, promoting the role of libraries as essential hubs for information access, research support, and knowledge dissemination in an increasingly digital and interconnected world.

CONFLICT OF INTERESTS

None.

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