JLIS
Vol 49 No. 1
June 2024

Optimizing Electronic Resource Subscriptions and Usage: A Study of Guru Nanak Dev University

Harish Chander*
Satwinderpal Kaur Gill**
Rajinder Kumar***

E-resources, or electronic resources, include a broad spectrum of themes and issues. Access to collected knowledge and information is now much easier, faster, and more convenient because to the development of digital technologies. Libraries are now adding unique items to their holdings as a result of the development of new technology. There is a growing trend of converting traditional print items into digital versions. E-resources, or electronic digital information sources, are vital to the academic community's quest for knowledge and investigation. This study demonstrates how Guru Nanak Dev University staff and students use technological resources. It displays an examination of electronic resources that has been subscribed to via INFLIBNET and E-Resource vendors. The results of the study will aid in comprehending users' information needs and enable university authorities and decision-makers plan, subscribe to, or buy the most pertinent e-resources for the research and academic communities.

Keywords: *Electronic resources, Usage of electronic resources, E-Resources, INFLIBNET, Guru Nanak Dev University (GNDU).*

---

* Dr Harish Chander1, Assistant Professor, Department of Library and Information Science, Guru Nanak Dev University, Amritsar-143005, Email: harish.libsc@gndu.ac.in

** Dr Satwinderpal Kaur Gill2, Assistant Professor, Department of Library and Information Science, Guru Nanak Dev University, Amritsar-143005, Email: satwinderpal.libsc@gndu.ac.in

*** Mr. Rajinder Kumar3, Research Scholar, Department of Library and Information Science, Guru Nanak Dev University, Amritsar-143005, Email: dadhwalrj@gmail.com

1 INTRODUCTION

The emergence of the Internet has led to an unprecedented surge in the utilization of electronic resources (e-resources) for research and development endeavors in recent years, substantially surpassing the diminishing usage of traditional print resources. Digital documents offer the advantage of direct access to information from the host computer, eliminating the need for intermediary mediums (Tenopir et al., 2013). The profound impact of technology on all facets of academic life and research is evident in today's rapidly evolving world. While higher education institutions in developed nations recognize the rich opportunities presented by technological advancements to seamlessly integrate innovations within the teaching-learning environment, developing countries are striving to enhance their learning experiences and remain equally competitive in this digital landscape (Henderson et al., 2015).

Contemporary academic libraries are intricate establishments that encompass diverse roles, a multitude of operational tasks, and an array of services that have evolved over time. However, their fundamental objective has persisted – facilitating access to reliable and influential knowledge. As a result, academic libraries, along with their private and governmental counterparts, have long maintained an unchallenged position worldwide as the primary purveyors of recorded knowledge and historical information, particularly within the realm of higher education (Campbell, 2008).

2 E-RESOURCES: MEANING AND CONCEPT

E-resources, short for electronic resources, refer to the wide range of materials accessible in digital format, including e-books, e-journals, databases, websites, and other multimedia content. These resources have become increasingly prevalent in academic and research settings, offering several advantages over traditional print materials. One of the primary benefits of e-resources is their accessibility. Users can access these resources remotely, anytime and from anywhere, as long as they have an internet connection (Sharma, 2009). This convenience has been particularly valuable during the COVID-19 pandemic, enabling researchers and students to continue their work from home (Oduntan & Jange, 2022). E-resources also offer enhanced search capabilities and the ability to manipulate and analyze data more efficiently (Panda & Swain, 2009). Full-text searching, keyword searching, and advanced filtering options make it easier to locate relevant information quickly.

Moreover, e-resources can be more cost-effective for libraries and institutions compared to print materials, as they eliminate the need for physical storage space and reduce maintenance costs (Sharma, 2009). Additionally,

many e-resources are available through subscription models, allowing multiple users to access the same content simultaneously. However, there are also challenges associated with e-resources, such as potential access issues, compatibility concerns, and the need for proper licensing and copyright management (Panda & Swain, 2009). Libraries and institutions must ensure that they have the necessary infrastructure and policies in place to effectively manage and provide access to these resources. With the continuous advancements in technology and the increasing demand for digital content, e-resources have become an integral part of modern libraries and research institutions (Oduntan & Jange, 2022). Librarians and information professionals play a crucial role in selecting, organizing, and promoting these resources to support the diverse needs of their user communities.

E-resources can be classified into various types based on their content, format, and purpose such as e-books, e-journals, databases, e-newspapers and e-magazines, online reference works, multimedia resources, e-theses and dissertations, open access resources, online course materials, institutional repositories, digital archives and data repositories (Puneeth, 2019).

3 LITERATURE REVIEW

Academic libraries are increasingly adopting a user-centric approach to provide tailored e-resource services that meet the diverse needs of their users. Customized access and support systems enhance the user experience and promote greater utilization of e-resources (Adegbore, 2011). The trend of using e-resources has been steadily increasing, with a shift towards digital resources over traditional print media. E-Resources play a vital role in supporting teaching and research activities in academic institutions and now considered essential tools for academic and research communities (Mwantimwa et al., 2021). The utilization of E-Resources in academic libraries has significantly transformed the landscape of information access and scholarly activities. Academic staff, researchers, and students heavily rely on electronic resources like e-books, e-journals, e-theses, and e-databases for their teaching, learning, and research endeavors (Jamuna & Dhanamjaya, 2021). The institution's research and development efforts have shifted in recent years to concentrate more heavily on electronic instructional resources. A collection of information gathered using electronic means, such the Internet, is called an e-Library. Electronic resources have a bigger role in students' education because of their availability and accessibility over the Internet. In order to successfully accomplish their mission of giving students current, relevant knowledge and skills, engineering education institutions first examine how students use electronic resources and conduct online information searches (Dukiæ & Striškoviæ, 2015). According to Viswanathan and Sasireka (2016), using e-

resources has a significant influence on higher education. Since there are plenty of electronic resources available, the information needs are met. Although e-resources are seen favorably, there are several issues with their use. Lack of computer expertise prevents users from using and publishers from limiting access. Kebede (2002) discovered that while the majority of libraries had internet access, relatively few of them provided web-based information services to their patrons following a survey of ten African public libraries. Nevertheless, the study finds some obstacles to the efficient delivery of electronic resources in those libraries.The IIM Kozhikode library's pattern regarding e-resources usage statistics observed by Sunitha (2019), which also draw the attention of information professionals on the many prospects in the usage of e-resources by the libraries and information centres. Veer and Panda (2021) conducted a survey on student and faculty of Chandigarh University library to know the e-resource usage statistics during the pandemic lockdown period and found that large number of users were aware regarding e-resources available in the library and use them efficiently as per their requirements. KrSenthil and Maniiarsan (2020) studied the awareness and perception of users of electronic resources such as e-journals, e-books, indexing and abstracting, review and databases provided by Bharathidasan University and Madurai Kamaraj University.The results indicated that the impact of e-resources increasing and majority of respondents had good awareness and were satisfied with the use of electronic resources.

4 OBJECTIVES OF THE STUDY

1. To know the e-resources subscribed by Bhai Gurdas Library, central library of Guru Nanak Dev University;
2. To know the usage pattern of e-resources subscribed via commercial vendors and INFLIBNET;
3. To analyse high-demand e-resources, such as SpringerLink, JSTOR, and Taylor and Francis, IEEE, JGate Plus, SCOPUS, Web of Science etc;
4. To analyze the usage patterns of individual databases to identify the most relevant e-resources;
5. To use the observed information to make decisions about acquiring or renewing subject-specific e-book and e-textbook collections.

5 RESEARCH METHODOLOGY

The data regarding usage statistics of e-resources were obtained from website of Bhai Gurdas Library, a central library of Guru Nanak Dev University, Amritsar, INFLIBNET centre and online commercial vendors/publishers to observe user's preferences for the desired source of digital information. The data of e-resources' usage recorded from the years 2019 to 2023, of five

years which include Covid-19 pandemic period also. The collected data analysed with the help of MS-Excel to present it in tabular and graphical formats.

6 ANALYSIS AND DISCUSSION

6.1 E-Resources at Bhai Gurdas Library, Guru Nanak Dev University

The Bhai Gurdas Library, Guru Nanak Dev University is a hub of academic resources that plays a vital role in enriching the educational experience at the university. With a vast collection of e-journals, e-books, and databases, the library offers a comprehensive range of electronic resources to support research and learning across various disciplines. Noteworthy events such as exhibitions of rare books, manuscripts, and photographs, along with seminars and workshops on e-resources, reflect the library's commitment to promoting awareness and utilization of these valuable assets. The institutions like INFLIBNET have contributed to enhancing the understanding and accessibility of e-resources at the library. The Table 1 describe that to facilitate and enhance the educational pursuits, including teaching, learning, and research endeavors undertaken within the university campus, the institution's library maintains subscriptions to a diverse array of databases.

Table 1: E-Resources Subscribed by GNDU Library

S.No	E-Resources subscribed through INFLIBNET	Databases subscribed through INFLIBNET	E-Resources subscribed through vendor	E-Books Subscribed through vendor
1	American Chemical Society	Institute for Studies in Industrial Development (ISID) Database	Scopus	Cambridge University Press
2	American Institute of Physics	Gate Plus (JCCC)	Science Direct	Elsevier
3	Annual Reviews	Math Sci Net	Scifinder	Springer Nature
4	American Physical Society (APS)	Web of Science	Wiley	Sage Publications
5	Institute of Physics	-	RSC	Oxford University Press
6	JSTOR	-	IEEE	Taylor and Francis
8	Oxford University Press	-	Theime (Synthesis)	-
9	Project Muse	-	-	-
10	Society of Indian Automobile Manufacturers (SIAM)	-	-	-
11	Springer Link	-	-	-
12	Taylor and Francis	-	-	-

(**Source:** https://library.gndu.ac.in/)

6.2 Usage Statistics of E-resources Subscribed via Commercial Vendor During 2019 to 2023

The Table 2 provides usage statistics of various e-resources subscribed by central library of Guru Nanak Dev University via commercial vendor from 2019 to 2023 which covers Scopus, Science Direct, Scifinder, Wiley, RSC, IEEE, and Theime (Synthesis).

Table 2: Usage Statistics of E-resources Subscribed via Commercial Vendor

S.No	E-Resources	2019	2020	2021	2022	2023	Total
1	Scopus	12173	15517	12546	18498	19122	**77856**
2	Science Direct	73207	78444	88091	116590	1152229	**1508561**
3	Scifinder	10072	20890	2291	1785	-	**35038**
4	Wiley	6302	10625	18951	27103	26242	**89223**
5	RSC	7257	3753	983	13071	14312	**39376**
6	IEEE	2426	758	1378	2049	2285	**8896**
7	Theime (Synthesis)	465	341	713	759	-	**2278**
	Total	**111902**	**130328**	**124953**	**179855**	**1214190**	**1761228**

It found that Science Direct has the highest total usage of 1,508,561 over the five-year period, with a significant increase in 2023 (1,152,229 usages). Scopus and Wiley also have substantial usage, with 77,856 and 89,223 total usage, respectively. RSC and IEEE have moderate usage, with 39,376 and 8,896 total usages, respectively. Scifinder and Theime (Synthesis) both have relatively lower usage compared to other resources.

The overall usage across all e-resources increased from 111,902 in 2019 to 1,214,190 in 2023, indicating a growing demand and utilization of e-resources over time. Science Direct and Wiley consistently recorded high usage across all years, with Science Direct showing a remarkable surge in 2023. Scifinder had a significant increase in usage in 2021 (22,291) compared to other years.

6.3 Usage Statistics of E-Resources Subscribed via INFLIBNET During 2019 to 2023

Table 3 indicates usage statistics for various electronic resources subscribed through INFLIBNET (Information and Library Network Centre) from 2019 to 2023.

Table 3: Usage Statistics of E-Resources Subscribed via INFLIBNET

S.No	E-Resources	2019	2020	2021	2022	2023	Total
1.	American Chemical Society	26943	12918	20187	2734	1	**62783**
2.	American Institute of Physics	4057	829	2153	1902	541	**9482**
3.	Annual Reviews	558	253	537	753	663	**2764**
4.	APS	-	626	1310	2069	854	**4859**
5.	Institute of Physics	-	57	13	1	-	**71**
6.	JSTOR	7406	5795	7263	9212	12169	**41845**
7.	Oxford University Press	3906	2257	3586	1118	1205	**12072**
8.	Project Muse	540	87	139	184	240	**1190**
9.	SIAM	1	-	1	-	-	**2**
10.	Springer Link	-	18963	33549	52336	57775	**162623**
11.	Taylor and Francis	1609	5257	8080	14466	14538	**43950**
	Total	**45020**	**47042**	**76818**	**84775**	**87986**	**341641**

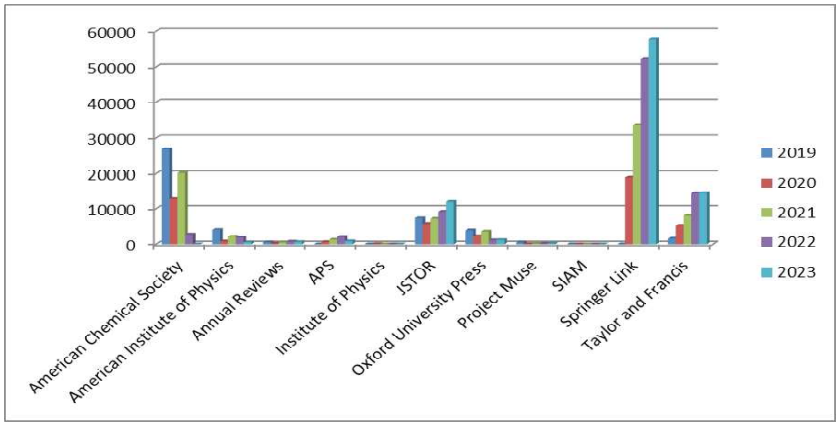

Figure 1: Usage Statistics of E-Resources Subscribed via INFLIBNET

The Table 3 depicts 11 different e-resource providers, including publishers such as American Chemical Society, American Institute of Physics, Annual Reviews, Oxford University Press, and aggregators like JSTOR, Project Muse, and SpringerLink. The e-resource with the highest total usage during the given period is SpringerLink, with 162,623 usages, followed by JSTOR (41,845 usages), Taylor and Francis (43,950 usages), and American Chemical Society (62,783 usages). The total usage across all e-resources has shown a steady increase from 45,020 in 2019 to 87,986 in 2023, indicating a growing demand for electronic resources among users. The year 2022 saw a significant jump in usage for many e-resources, such as SpringerLink (52,336), Taylor and Francis (14,466), and JSTOR (9,212), possibly due to increased remote access requirements during the COVID-19 pandemic (Figure-1).

6.4 Usage Statistics of e-books/e-textbooks subscribed via commercial vendors during 2019 to 2023

Table 4 highlights the usage statistics of various e-books and e-textbooks subscribed by Guru Nanak Dev University (GNDU) library from 2019 to 2023.

Table 4: Usage Statistics of e-books/e-textbooks subscribed via commercial vendor

S.No	Database	2019	2020	2021	2022	2023	Total
1	Cambridge University Press	-	-	-	63168	90078	153246
2	Elsevier	-	2251	3578	264	208	6301
3	Springer Nature	-	867	1802	3277	4065	10011
4	Sage Publications	-	-	-	-	2222	2222
5	Oxford University Press	-	-	-	5817	12965	18782
6	Taylor and Francis	-	1635	129368	12886	10598	154487
	Total	-	4753	134748	85412	120136	345049

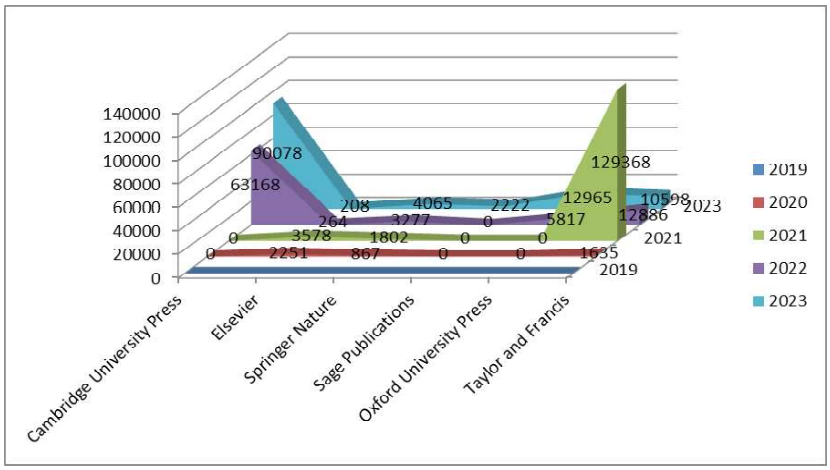

Figure 2: Usage Statistics of e-books/e-textbooks subscribed via commercial vendor

The Table 4 explores the total usage across all commercial databases from 2019 to 2023 is 345,049 views/downloads. The e-book/e-textbook subscriptions started from 2020/onwards. It is observed that Taylor and Francis had the highest overall usage with 154,487 views/downloads, followed by Cambridge University Press with 153,246 views/downloads. Elsevier and Sage Publications had comparatively lower usage, with 6,301 and 2,222 views/downloads, respectively. Springer Nature and Oxford University Press had

moderate usage, with 10,011 and 18,782 views/downloads, respectively.

The year 2021 saw a significant increase in usage, with a total number of 134,748 views/downloads, primarily driven by Taylor and Francis. In 2022, the total usage was 85,412 views/downloads, with Cambridge University Press contributing the highest share. The data for 2023 shows a total of 120,136 views/downloads until the recorded period, with Cambridge University Press and Oxford University Press having the highest usage (Figure-2).

6.5 Usage Statistics of Databases Subscribed via INFLIBNET

Table 5 provides usage statistics of various databases subscribed through INFLIBNET for the years 2019 to 2023.

Table 5: Usage Statistics of Database Subscribed via INFLIBNET

S.No	Databases	2019	2020	2021	2022	2023	Total
1	Institute for Studies in Industrial Development (ISID) Database	-	-	-	-	-	-
2	JGate Plus (JCCC)	6735	3385	3343	2790	2179	**18432**
3	MathSciNet	350	311	717	938	370	**2686**
4	Web of Science	-	1197	1925	4589	3243	**10954**
	Total	**7085**	**4893**	**5985**	**8317**	**5792**	**32072**

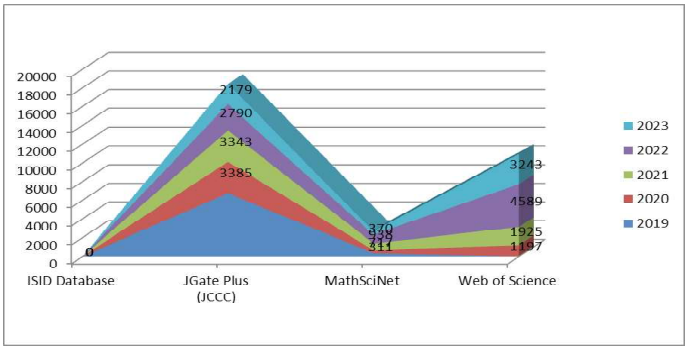

Figure 3: Usage Statistics of Database Subscribed via INFLIBNET

It is found from the analysis that JGate Plus (JCCC) has the highest usage across all years, with a total of 18,432 accesses. However, the usage has been declining over the years, from 6,735 in 2019 to 2,179 in 2023. Web of Science has seen a steady increase in usage from 2020 onwards with increased usage to 4,589 in 2022 and 3,243 in 2023. MathSciNet database usage fluctuated over the years as highest in 2022 with 938 accesses but dropped to 370 in 2023.

7 CONCLUSION

In conclusion, the analysis highlights the importance of regularly monitoring and assessing e-resource usage data to make informed decisions about subscription renewals, cancellations, or additions. The total usage across all databases increased from 7,085 in 2019 to 8,317 in 2022. The upward trend in the usage of e-resources at GNDU, with Science Direct being the most heavily utilized resource, especially in the most recent year (2023). The usage data indicates a growing trend in the adoption and utilization of e-books and e-textbooks by GNDU users over the years. Taylor and Francis and Cambridge University Press appear to be the most popular and widely used resources among the subscribed databases. The JGate Plus (JCCC) had the highest overall usage. Web of Science has seen a steady increase in recent years. By aligning e-resource subscriptions with user demand and optimizing resource allocation, the institution can effectively support the research and academic needs of its user community while maximizing the return on investment.

8 REFERENCES

Adegbore, A. (2011). University Faculty Use of Electronic Resources: A Review of the Recent Literature. *PNLA Quarterly*, 75(4), 1-12.

Campbell, T. (2008). *U. S. Patent Application,* No. 11/853,007

Dukiæ, D., & Striškoviæ, J. (2015). *Croatian university students' use* and *perception of electronic resources*. *Library & Information Science Research*. https://doi.org/10.1016/j.lisr.2015.04.004

E-Resources subscribed by Guru Nanak Dev University. (n.d.). https://library.gndu.ac.in/

Francis, F. (2024). *Role of e-resources in academic libraries*. https://doi.org/10.5281/zenodo.10453274

Henderson, M., Selwyn, N., & Aston, R. (2015). What works and why? Student perceptions of 'useful' digital technology in university teaching and learning. *Studies in Higher Education*. https://doi.org/10.1080/03075079.2015.1007946

Jamuna, Konduru &Dhanamjaya, M.(2021*).* Impact and Usage of E-Resources: A Literature Review. *Library Philosophy and Practice (e-journal)* https://digitalcommons.unl.edu/libphilprac/6735/?utm_source=digitalcommons.unl.edu% 2Flibphilprac%2F6735&utm _medium=PDF & utm_campaign=PDFCoverPages

Kebede, G. (2002).The changing information needs of users in electronic information environments. *The Electronic Library*, 20(1), 14-21. https://doi.org/10.1108/02640470210418227

Kr, Senthilkumar and Maniiarsan P (2020). Comparison of e- resources with their usage statistics in Southern region. *Library Philosophy and Practice (e-journal)*. 3834. https://digitalcommons.unl.edu/libphilprac/3834

Mwantimwa, Mwabungulu, & Kassim . (2021). Academic Staff and Researchers' Use of Electronic Resources in Tanzania: A Comparative Study . *International Journal of Education and Development Using Information and Communication Technology* , *17*(2), 55-75.

Oduntan, M., &Jange, S. (2022). Impact of COVID-19 pandemic on the use of electronic resources by students of private universities in Ogun State, Nigeria. *The Electronic Library*, 40(2), 151-166. https://doi.org/10.1108/EL-04-2021-0122

Panda, S. K., & Swain, D. K. (2009). Management of e-resources in academic libraries with special reference to technical institutes in India. In *Proceedings of the 7th International CALIBER* (pp. 146-160).

Puneeth B M. (2019). *Effectiveness of Using E-resources in Academic Libraries: A Study*. https://www.ijlis.org/abstract/effectiveness-of-using-eresources-in-academic-libraries-a-study-69872.html

Sharma, C. (2009). Use and impact of e-resources at Guru Gobind Singh Indraprastha University (India): A case study. *Electronic Journal of Academic and Special Librarianship*, 10(1).

Sunitha, T (2019). E-resources usage statistics as an indicator and measure of knowledge consumption in higher learning academic institutions. *Asian Journal of Information Science and Technology*, 9 (1): 46-50. DOI: https://doi.org/10.51983/ajist-2019.9.S1.223

Tenopir, C., Volentine, R., & King, D. W. (2013). Increasing use of e-resources for research and development. Social media and scholarly reading. *Online Information Review*, 37(2), 193-216. https://doi.org/10.1108/OIR-04-2012-0062

Veer, R. and Panda, S. (2021). Usage statistics of e-resources during pandemic period: A case study of Chandigarh University library. *Library Philosophy and Practice (e-journal)*. 6339. https://digitalcommons.unl. edu/libphilprac/6339

Viswanathan, V. and Sasireka, I.(2016).Impact of Electronic Resources by users of .G.Vaishnav College, Chennai: A Survey, *International Journal of Engineering Sciences & Research Technology,* 5(7):.706-711. ISSN: 2277-9655 DOI: 10.5281/zenodo.57618