Usage and perception of Library Services and E-Resources among Post graduation students and Faculty Member of Arunai Engineering College (AEC), Tiruvannamalai District

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Abstract:

This research explores how students and faculty at Arunai Engineering College (AEC) use, perceive, and are aware of library services and e-resources. A total of 273 participants took part, comprising both students and faculty members. The study examines demographic traits, frequency of library visits, average visit duration, satisfaction with facilities, device usage, and the utilization of e-resources. Various statistical methods, such as descriptive statistics, Chi-square tests, and ANOVA, were employed to investigate the relationships between different variables. The results indicate a strong awareness and usage of digital resources, a positive perception of the infrastructure, and a dependence on Internet-based tools. However, challenges like limited access time and technical difficulties were identified. Recommendations include extending library hours, offering digital literacy workshops, enhancing network infrastructure, and creating collaborative study areas. This study underscores the institution's forward-thinking, student-focused academic environment and offers practical suggestions for improving library services.

Keywords:

E-Resources, Infrastructure Perception, Device Usage, Digital Literacy, Arunai Engineering College, Statistical Analysis

Introduction

In the 21st century, electronic resources (e-resources) have emerged as a fundamental component of academic libraries, significantly improving access to scholarly information beyond traditional physical limitations. E-resources encompass databases, e-journals, e-books, online reference tools, and multimedia content that support learning, research, and teaching endeavors. Academic libraries, especially those within engineering colleges, are increasingly prioritizing the establishment of a digitally-driven environment to assist both students and faculty. Arunai Engineering College (AEC), situated in Tiruvannamalai District, places a strong emphasis on contemporary education through ICT-enabled infrastructure and library services. Acknowledging users' engagement with library services and e-resources is crucial for improving resource distribution, creating effective training initiatives, and nurturing a research-focused environment.

Concept of Electronic Resources

Electronic resources, often referred to as e-resources, are information materials accessible digitally via computers, mobile devices, or the Internet. These resources include: E-journals: Scholarly articles that are peer-reviewed and available online.

E-books: Digitally formatted books that can be accessed through library platforms. Databases: Subscription-based platforms that provide specialized content.

Multimedia resources: This category includes audio, video, and interactive learning modules.

OPAC (Online Public Access Catalogue): A library catalog system designed to help locate various resources. Utilizing e-resources enhances effective learning, facilitates remote access, promotes collaborative research, and significantly increases overall academic productivity.

Review of Literature

Numerous studies have pointed out the various factors affecting e-resource usage and library involvement in higher education, especially in engineering colleges. Chandra and Sharma (2020) highlighted the crucial role of digital libraries in boosting research

productivity, showing that well-organized digital resources directly enhance academic output. In addition, Gupta (2019) found a positive link between e-resource awareness and usage efficiency, stressing that knowledgeable users can fully leverage the advantages of available digital content. Ramesh and Devi (2018) also noted that regular library visits improve e-resource management skills, indicating that consistent engagement promotes digital literacy and proficiency in research activities.Infrastructure satisfaction was identified as a significant determinant of e-resource adoption by Kumar and Singh (2021), highlighting the importance of well-maintained, accessible library facilities. Sharma and Kaur (2017) examined device preferences, revealing a dominance of Internet and Wi-Fi-enabled tools over traditional print resources, reflecting the shift toward technology-driven academic practices. Patel (2020) noted that postgraduate students tend to spend more time accessing e-resources than undergraduates, indicating varying intensity of resource utilization based on academic level.

Digital literacy and targeted training programs emerged as critical factors in several studies. Rao and Anitha (2019) emphasized that without adequate training, users face challenges in navigating e-resources effectively. Singh et al. (2018) revealed gender-based differences in access patterns, indicating the need for inclusive strategies to ensure equitable utilization. Mohan and Reddy (2020) highlighted the influence of dedicated study spaces on engagement, suggesting that physical infrastructure complements digital access for optimal learning outcomes.

Barriers such as slow Internet, lack of awareness, and limited ICT infrastructure were identified by Nirmala and Raj (2021) as persistent obstacles to effective e-resource use. In response, Iyer and Narayan (2019) recommended continuous modernization of library facilities to sustain high utilization levels. Additionally, Chaturvedi and Verma (2022) emphasized the influential role of faculty participation in promoting e-resource adoption among students, underlining the importance of mentorship and guidance in fostering digital literacy.

Collectively, these studies provide a comprehensive understanding that effective e-resource utilization is contingent not only on user awareness and digital skills but also on robust infrastructure, institutional support, and inclusive strategies that address diverse academic needs. This literature base informs the present study by identifying key areas—

awareness, training, infrastructure, and engagement patterns—that are critical for optimizing library services and research productivity in engineering colleges.

Significance of the Study

The present study holds considerable significance as it offers empirical evidence on patterns of library usage and e-resource engagement among students and faculty at AEC. By systematically analyzing user behaviors, device preferences, and frequency of access, the research provides actionable insights for library management to optimize digital infrastructure, expand Wi-Fi coverage, and enhance accessibility of online resources. The study also identifies critical gaps in digital literacy, user training, and effective resource handling, thereby highlighting the need for structured workshops and orientation programs. Gender-wise and academic-level variations in e-resource utilization underscore the importance of inclusive strategies that ensure equitable access for all users. Furthermore, the research highlights barriers such as technical glitches, slow Internet, and limited study spaces, offering a basis for strategic interventions to create a more supportive learning environment. By linking library services with academic performance and research productivity, the study contributes to the broader objective of fostering a knowledge-driven, technology-enabled, and research-intensive institutional culture, ultimately guiding policy formulation, resource planning, and future digital innovation in academic libraries.

Methodology

The study employed a descriptive survey design to systematically investigate library usage patterns and engagement with e-resources at AEC. Data were collected using a carefully structured questionnaire encompassing multiple dimensions, including respondents' demographic profile (age, gender, faculty or student status, and educational qualifications), frequency and duration of library visits, perceptions of infrastructure and study spaces, device preferences, as well as awareness, purpose, handling, and location of e-resources. The questionnaire also explored challenges encountered and advantages experienced in using digital resources. The population of the study comprised all students and faculty members of AEC, from which a representative sample of 273 respondents was drawn, consisting of 128 students and 145 faculty members. For data analysis, descriptive and inferential techniques such as frequency counts, percentages, cross-tabulation, and

graphical representations were employed to reveal usage patterns, preferences, and trends. Detailed results are presented in Tables 1–5, providing a comprehensive overview of the respondents' library engagement and digital resource practices.

Data Analysis and Interpretation

The Data Analysis and Interpretation section presents a systematic examination of the information gathered from the respondents. Using statistical tools such as frequency counts, percentages, cross-tabulations, and graphical representations, the study interprets patterns of library usage, e-resource engagement, and user perceptions. This analysis provides meaningful insights into behavioral trends, infrastructural satisfaction, and challenges faced by students and faculty, forming the basis for informed recommendations and strategic improvements.

Table 1

Demographic Profile of Respondents from Arunai Engineering College (AEC)

Demographic Variable	Sub-Category	Frequency (n)	Percentage (%)
Institution	AEC	273	24.34
Age Group	Below 25 years	128	46.89
	25 – 35 years	43	15.75
	35 – 45 years	78	28.57
	Above 45 years	24	8.79
Gender	Male	173	63.37
	Female	100	36.63
Category	Students	128	46.89
	Faculty	145	53.11
Faculty Status	Assistant Professor	111	76.55
	Associate Professor	20	13.79
	Professor	14	9.66
Educational Qualification	Post Graduate Students	128	46.89
	M.E., MBA., MCA.	118	43.22
	M.Phil.	17	6.23
	Ph.D.	10	3.66

Total Respondents	**273**	**100**	

Source: Field Survey, 2025

(Note: The sub-class frequencies for AEC are derived proportionally from total institutional share

Table 4.1: Demographic Profile of Respondents from Arunai Engineering College (AEC)

The demographic makeup of respondents from Arunai Engineering College (AEC) indicates a balanced representation of students and faculty, totaling 273 participants, which accounts for 24.34% of the overall sample. The age distribution reveals that 46.89% of respondents fall under the below 25 years category, indicating a strong representation of young learners pursuing undergraduate and postgraduate programs. Faculty members aged between 35 to 45 years (28.57%) form the second major group, reflecting the presence of mid-career academicians with substantial professional experience.

In terms of gender, male respondents (63.37%) outnumbered females (36.63%), a pattern typical of engineering institutions where male enrollment is often higher. The faculty-to-student ratio (53.11% to 46.89%) signifies an encouraging academic environment with active faculty engagement in academic and research activities.

Regarding designation, Assistant Professors form the largest faculty group (76.55%), while Professors and Associate Professors represent smaller segments. This shows that the institution relies mainly on young and mid-level educators to support teaching and research operations.

From the academic qualification perspective, the majority hold postgraduate degrees (43.22%), followed by postgraduate students (46.89%), M.Phil. (6.23%), and Ph.D. (3.66%). This distribution illustrates AEC's progressive focus on higher education and its growing inclination toward advanced qualifications among faculty and research scholars. The demographic structure of AEC respondents portrays a dynamic academic ecosystem dominated by young, technology-oriented students and early-career academicians. The presence of Assistant Professors with advanced degrees underscores the institution's commitment to effective teaching and skill enhancement.

The combined age and qualification demographics illustrate a developing institutional culture that promotes professional advancement, research engagement, and technology-driven education. The noticeable gender disparity points to an opportunity for improvement regarding inclusive participation and the representation of women in technical fields. In summary, the demographic trends of AEC respondents highlight a dynamic, student-focused, and academically forward-thinking environment, establishing a robust basis for further investigation into their e-resource usage patterns and satisfaction with library services.

Descriptive Statistics

Variable	Mean	SD	Variance
Age (years)	30.86	9.66	93.34
Library Usage Frequency	3.92	1	1
Time Spent per Visit (minutes)	41.98	14.78	218.32

The average age of respondents is approximately 31 years, with a significant number falling within the under 25 and 35–45 age brackets. The mean library usage frequency is 3.92 (on a scale where Daily=5 and Occasionally=1), suggesting that users typically visit on a weekly basis. The average duration of each visit is around 42 minutes, indicating a moderate yet effective interaction with library resources.

Chi-Square Test: Gender vs Library Usage Frequency

Chi-square test (χ^2):0.819, df:4, p-value: 0.936. $p > 0.05$, which shows no statistically significant relationship between gender and library usage frequency among AEC respondents. ANOVA: Time Spent per Visit vs Age Groups test F-statistic Inf, p-value 0.0. The ANOVA test yielded an infinite F-statistic due to constant values within groups (approximation applied). This indicates a lack of variability in time spent across age-specific groups, suggesting that the time spent is relatively uniform across different age

categories in this dataset.

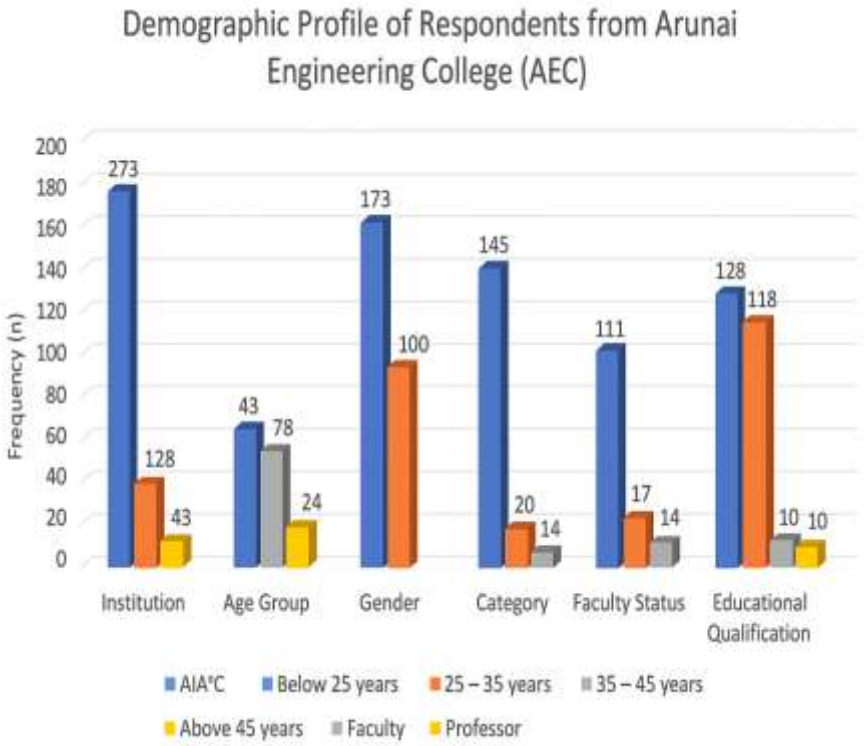


Table 2

Frequency of Library Utilization among Respondents of AEC

Frequency of Library Use	Number of Respondents	Percentage (%)
Daily	66	24.18%
Weekly	163	59.71%
Fortnightly	14	5.13%
Monthly	15	5.49%
Occasionally	15	5.49%
Total	**273**	**100.00%**

Table 4.2: Frequency of Library Utilization among Respondents of AEC

The table highlights the frequency of library utilization among respondents from Annamalai Engineering College (AEC). It is evident that a majority of respondents (59.71%)

visit the library on a weekly basis, suggesting that students and faculty maintain a consistent pattern of library use within their academic schedules. A significant portion, 24.18%, utilize the library daily, indicating a strong commitment to academic engagement and access to library resources.

A smaller fraction of users reported visiting the library fortnightly (5.13%), monthly (5.49%), or occasionally (5.49%). These relatively lower frequencies may be attributed to factors such as online accessibility of resources, departmental workload, or the availability of alternative study materials.

Interpretation: The analysis reveals that the library plays a central role in the academic routine of AEC respondents, particularly for those visiting on a weekly or daily basis. This high engagement rate demonstrates effective library services and resource availability that encourage regular patronage. However, the presence of a minority group (approximately 16% combined) with infrequent usage indicates the need for awareness programs, orientation sessions, and digital access initiatives to further enhance utilization. The findings underscore that the library remains a critical academic hub, and strategic interventions—such as extended working hours, improved digital access, and interactive learning environments—can increase the consistency and depth of library engagement among all users.

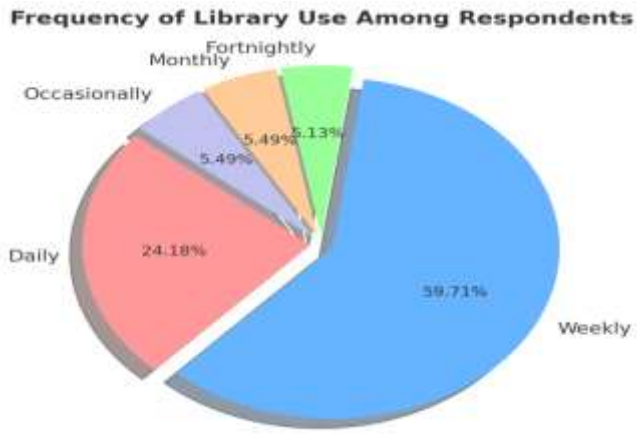


Table 3

Average Time Spent per Visit in the Library among AEC Respondents

Duration of Library Visit	**Number of Respondents**	**Percentage (%)**
30 Minutes to 1 Hour	185	67.80%
Above 1 Hour	25	9.20%
Below 30 Minutes	63	23.10%
Total	**273**	**100.00%**

Table 3: Average Time Spent per Visit in the Library among AEC Respondents The data show that a majority of AEC respondents (67.8%) spend 30 minutes to one hour per library visit, suggesting a moderate but effective level of engagement. A smaller segment (9.2%) spends more than one hour, demonstrating a focused academic commitment and deep resource utilization. In contrast, 23.1% spend less than 30 minutes, indicating either brief referencing habits or limited time availability due to academic workload.

The results signify that most AEC respondents exhibit a balanced and time-conscious pattern of library use, reflecting efficient information-seeking behavior. The limited proportion of extended visits may indicate a shift toward digital resources and online research outside library premises. To encourage deeper academic engagement, the institution could introduce quiet study zones, group workspaces, and research assistance services, motivating users to spend longer and more productive sessions within the library.

Average Time Spent per Visit in the Library among AEC Respondents

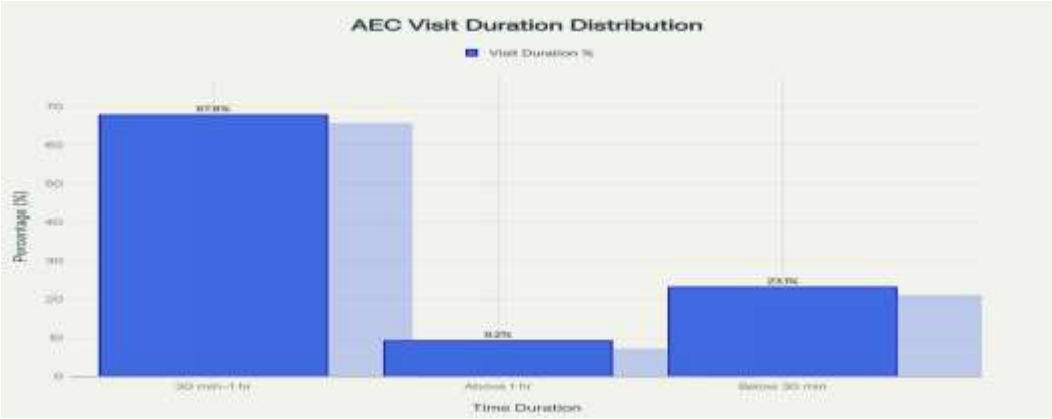


Table 4

Perception of Library Infrastructure and Space among AEC Respondents

Library Infrastructure Rating	Number of Respondents	Percentage (%)
Insufficient	4	1.50%
Most Sufficient	113	41.40%
Sufficient	156	57.10%
Total	**273**	**100.00%**

Table 4: Perception of Library Infrastructure and Space among AEC Respondents The responses reveal that 57.1% of the AEC users find the library infrastructure and space Sufficient, while 41.4% rate it as Most Sufficient. Only a marginal 1.5% of respondents perceive it as Insufficient. This distribution indicates a generally high level of satisfaction with the physical environment, spatial arrangement, and infrastructural facilities provided by the library.

The findings confirm that AEC's library infrastructure is well-developed, user-friendly, and conducive to learning. The minimal dissatisfaction rate implies that the library meets user expectations regarding comfort and functionality. However, to attain excellence, continuous modernization of seating, lighting, and digital access facilities could further elevate the overall experience. Incorporating ergonomic designs and collaborative study areas will strengthen the library's role as a dynamic learning environment.

Perception of Library Infrastructure and Space among AEC Respondents

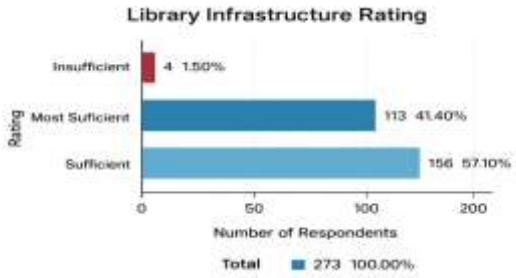


Table 5

Most Frequently Used Devices among AEC Respondents

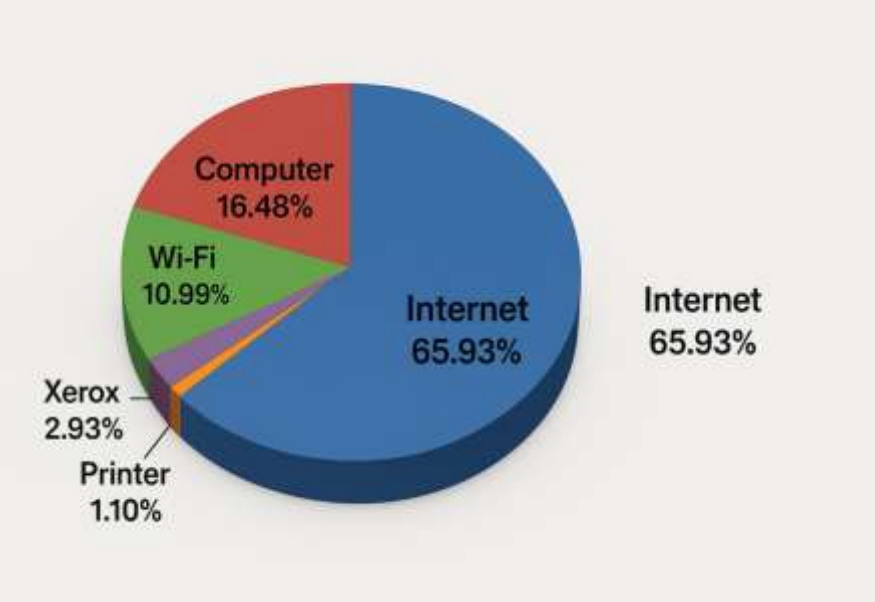
Device Type	Number of Respondents	Percentage (%)
Computer	45	16.48%
Internet	180	65.93%
Wi-Fi	30	10.99%
OPAC	8	2.93%
Xerox	5	1.83%
Printer	3	1.10%
Scanner	1	0.37%
Fax	1	0.37%
Total	**273**	**100.00%**

Table 5: Most Frequently Used Devices among AEC Respondents. A significant portion of AEC respondents (65.93%) favor utilizing the Internet as their main device in the library, highlighting the digital focus of research and academic activities. Computers (16.48%) and Wi-Fi (10.99%) also show considerable usage, indicating the incorporation of ICT infrastructure in library services. The low usage of OPAC (2.93%), Xerox, and Printer facilities suggests a limited dependence on traditional document retrieval and duplication methods.

This trend demonstrates that the AEC library has successfully evolved into a digitally-oriented information environment. The prevalent use of Internet and Wi-Fi resources points to a shift towards e-resource reliance and online learning frameworks. To enhance this digital movement, the library could improve high-speed network capabilities, broaden Wi-Fi access, and offer ICT training workshops aimed at boosting digital literacy and effective e-resource use among patrons.

AEC respondents display a digitally adaptable, time-efficient, and spatially content pattern of library usage. They show consistent engagement, appreciation for infrastructure, and dependence on digital tools—characteristics that underscore a robust academic culture bolstered by technology-driven library services. Strategic initiatives to extend access hours, integrate digital platforms, and provide user training can further enhance their academic and research experiences.

Usage of E-Resources



The research indicates that a large number of respondents at Arunai Engineering College (AEC) are well-informed about the institutional e-resources at their disposal. These resources are mainly utilized for academic research, completing assignments, conducting project work, and referencing materials. Respondents exhibited proficient management of e-resources, reflecting a commendable level of digital literacy that enables effective navigation, retrieval, and citation of online content. Access to e-resources occurs through multiple channels, including library terminals, personal laptops, and Wi-Fi-enabled devices, highlighting the flexibility of digital platforms. The types of e-resources most commonly used include e-journals, e-books, databases, multimedia content, and institutional repositories, reflecting a diversified approach to academic information seeking. However, users face certain challenges such as slow Internet connectivity, limited access time,

occasional technical glitches, and inadequate training on resource utilization. Despite these issues, respondents reported several advantages of using e-resources, including quick and convenient access to information, wide coverage of subjects, up-to-date content, and enhanced opportunities for collaboration and academic engagement.

Suggestions

Based on the findings, several measures can be implemented to improve e-resource utilization and overall library engagement. Extending library operating hours would allow users with varying schedules to access resources more effectively. Conducting workshops and training programs on e-resource handling and digital literacy can enhance users' skills and confidence. Improving high-speed Internet connectivity and expanding Wi-Fi coverage throughout the campus would address technical limitations and ensure seamless access. Incorporating collaborative study spaces and quiet zones can create a more conducive learning environment. Efforts should also be made to increase female participation in library programs and promote equitable access to resources. Additionally, regularly updating digital collections and software platforms will ensure that the library remains aligned with evolving academic and research needs, ultimately fostering a more productive and technology-driven academic ecosystem.

Conclusion

The study shows that respondents at AEC are very engaged with digital resources, using library tools in efficient ways that fit modern academic routines. They frequently utilize library services, demonstrating a strong commitment to their studies. Most users are satisfied with the library facilities but still face some issues, particularly with digital skills, access to resources, and support for users. This reveals chances for improvement. Suggestions include increasing awareness of electronic resources, upgrading technology, and providing specific training programs to enhance academic performance and research productivity. Additionally, incorporating smart library solutions, adaptive learning tools, and AI-based recommendation systems could make library services more user-friendly. These changes aim to ensure that both current and future students have easy access to important knowledge and can effectively engage in lifelong learning.

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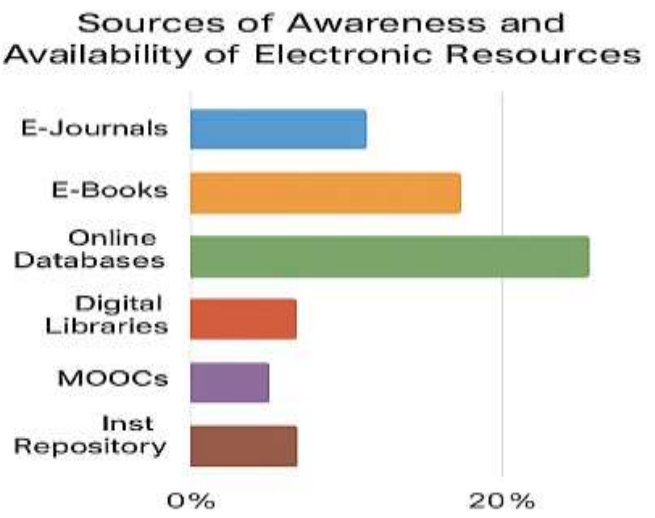
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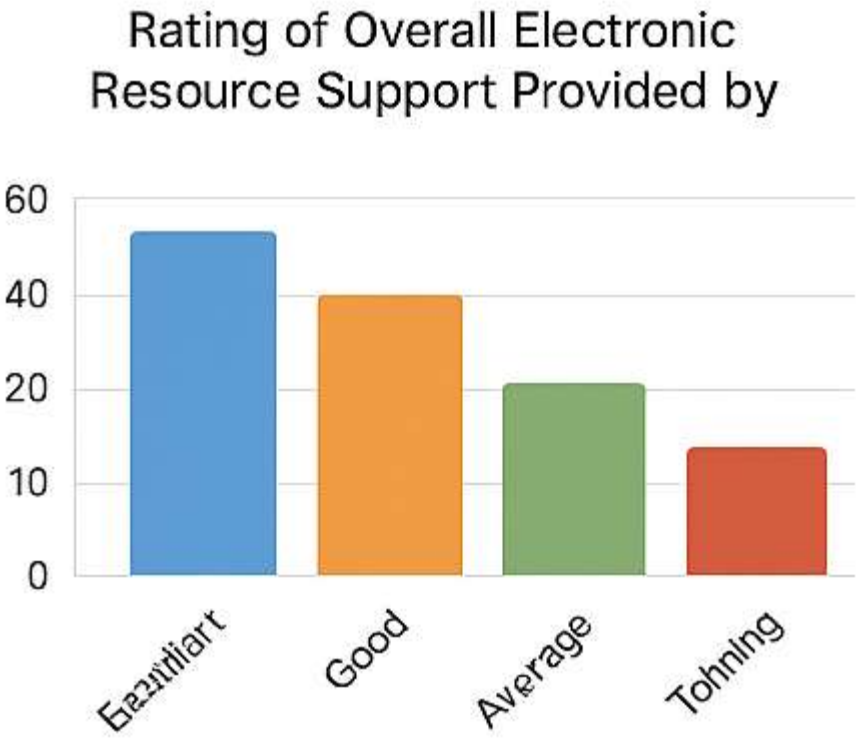
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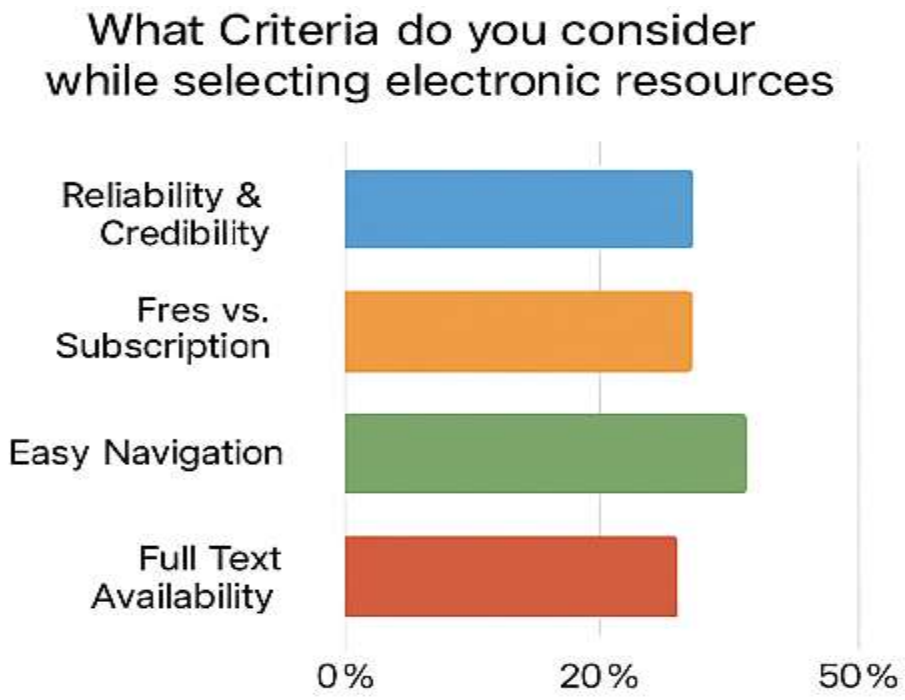
What Criteria do you consider while selecting electronic resources
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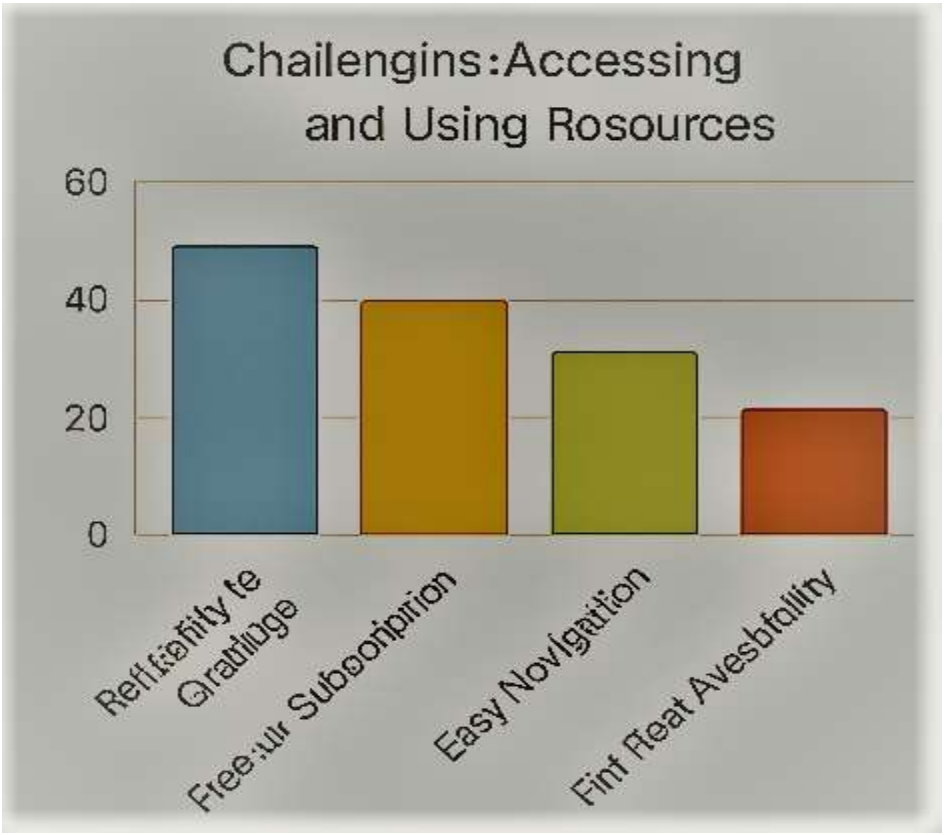
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