



Assessing The Use and Impact of Digital Library Services on Academic Performance and Information Access Among Students

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Abstract

The development of digital library services has been critical to academic institutions by offering fast, convenient, and remote access to various information sources. Digital library services refer to computer-mediated sources of information and services made available through computer networks for academic learning and research purposes. The aim of this research was to investigate the utilization and influence of digital library services on the performance of academic staff and students regarding information acquisition. The descriptive and analytical research methodology was applied and data was obtained from a total number of 270 respondents, comprising 185 students and 85 staff members from select higher institutions of learning. It was revealed that students make more use of digital library sources compared to their academic counterparts, with the vast majority accessing digital libraries on daily or weekly bases. Services such as e-books, online journals, search engines for literatures, email services, question banks, and web-based information sources were established as being widely used in academic institutions. Digital library services facilitate greater access to academic information and positively influence learning and researching activities. Also, digital library resources have minimized the dependency on print media sources and ensure continuity of access to the relevant information.

Keywords: Digital Library Services, Academic Performance, Information Access, E-Resources, Higher Education Institutions

1. Introduction

A "digital library" is a group of digital resources that can be used and shared by a network or a group of people over the internet. Some people get more out of this than they would from going to a regular library. When people use a dynamic library, words are used in many ways, such as to give hints about activities that are not directly related to each other. Information extraction, knowledge processing, knowledge gathering, visual and audible sorting, online software stores, computer archives, mobile archives, picture files, digital backup, digital text, eBooks, publishing collections, electronic journals, and many more are some of these things. There are also a huge number of different ways to use words. These problems were solved by computer scientists, engineers, researchers, and other experts in the field who worked on digital libraries. Digital libraries' main goals are to give people access to digital content and make it easy to find again. A answer to these problems called digital libraries was made possible by the work of other pros in the field. We will talk about the hard work of library and

information workers who work on the ground level in the next line. These are the people who work in digital libraries on the collecting, connection, and management sides.

The Stanford Digital Library does research on all kinds of digital libraries. The following groups could be made out of these digital libraries: "Bundle defined" is what they mean when they say "such as planned gathering of services." They define it as "such as planned gathering of services that depend on collections of materials, such of which that can never be legitimately influenced by the affiliation giving assistance in which they play a role."

According to E.A., a digital library is a "better approach to completing the elements of libraries" that includes "new types of data assets, new ways to handle characterization and listing, serious use of electronic frameworks and systems, and breathtaking changes in scholarly, authoritative, and electronic practices." This is what the 1994 IEEE GALA Workshop on Intelligence Access to Online Digital Libraries said: "A digital library is a collection of digital registering, storage, and exchange

hardware along with the content and programming needed to copy, imitate, and extend the services provided by traditional libraries that use paper and other material methods for collecting, categorizing, finding, and sharing information." One definition of a conventional library is one that collects, organises, locates, and distributes information via the use of paper and other physical instruments. In addition to having all of the same components as a conventional library, a full-service digital library also makes use of the many advantages that come with the storing of digital documents, doing research, and communicating with users.

Physical access to a number of academic libraries at universities and colleges throughout the nation is temporarily restricted in the event of a pandemic, such as the COVID-19 pandemic. Every single one of West Bengal's educational institutions offers its classes and courses entirely online. Each university adheres to a unique set of regulations that were established by the University Grants Commission and the institution that serves as its parent. As a direct consequence of this, college libraries are having difficulty acquiring sufficient quantities of books and other materials to assist students in expanding their knowledge beyond the confines of the classroom. Therefore, the user community is placing a greater focus on the need for an electronic version of the printed information, which is also referred to as e-resources. The reason for this is that people can't always get their hands on the papers. Every university library in West Bengal is working very hard to keep up with the growing demand for digital materials.

To do this, they make their designs available on a lot of different sites. Some tools that fall into this group are email, WhatsApp, Facebook groups, and Telegram groups. On top of that, this group includes the main websites, blogs, and YouTube feeds of the university libraries. It is still hard to make everyone happy at the same time, even when everyone works together, and sometimes the same things have to be done over and over again. Additionally, it's worth noting that many libraries have issues when they try to share information over the internet. Some of the things that could be causing this problem are not having enough room, time, money, or workers, not having enough tools or software, and so on. To fix these problems, a central library with electronic tools has been created to keep everything in order. This database has a lot of useful information on many topics. It has audio and video lessons, electronic books, and other electronic materials. The Common Book and Content Standard (CBCS) curriculum is used by many student schools in West Bengal that are connected to many universities. All of them are built around this curriculum.

2. Review Literature

Modern library patrons' demands, together with developments in information retrieval technology, have prompted many physical libraries to become digital. Users are looking for more than just printed documents. While the library's printed materials cover a restricted number of subjects, they need a plethora of other resources. That's why users need a wide range of content types and digital library formats for their subject-related information retrieval needs. Digital libraries and the services they provide have a significant impact on information collection and user

pleasure in today's environment. Digital libraries and the services they provide are the focus of this study, which also explores their use and other pertinent topics. The most sought-after digital library services are e-books and subject-specific databases. The majority of users still prefer paper learning materials, even when all resources are available in digital form. Several innovations in technology and the expansion of the internet have put academic libraries at the front of offering state-of-the-art information and library services to a diverse array of fields. When it comes to gathering or seeking information, this helps to accommodate consumers from many walks of life. They need resources that are not replacements, but rather alternatives. The fundamental focuses of this research are digital library services and their utilization by students. M Ganesamoorthy (2023) ^[1].

The potential of digital library resources (DLRs) to enhance academic production and research has been acknowledged worldwide. The purpose of this empirical study was to analyze the impact of DLRs on engineering research in Pakistan by predicting the satisfaction and research productivity of respondents via an examination of their use. We surveyed 196 out of 707 public engineering school students in KPK, Pakistan, for their thoughts using a quantitative research technique. Statistical data analysis could be performed on 177 questionnaires that passed the first data screening, whereas 5 questionnaires were discarded due to missing values, errors, or inadequate data. Ninety percent was the calculated response rate. This empirical study found that users' enjoyment and research productivity were strongly impacted by the frequency and purpose of DLR use. Furthermore, there was a notable correlation between the dependent variables (user happiness and research productivity) and the independent factors (DLRs Purpose and DLRs Frequency). The study's results also corroborated each of the four interdependent hypotheses. The study's key findings may encourage university libraries to further alter their information source provision in order to strengthen research efforts and establish a scientific knowledge-based society in the country. In addition, the HEC, university library administrators, LIS specialists, and information providers should use these data to their advantage when developing e-resources and policies to optimize the utilization of DLRs. This paper examines the impact of DLRs on engineering research within the context of engineering colleges in Pakistan. Shamshad Ahmed (2016) ^[2].

Lateef Umoru (2025) ^[3] With the digitization of books, journals, and magazines, among other intellectual materials, libraries have transformed into virtual ones. Information is being generated, shared, and stored at a higher rate on a worldwide scale as a result. You may easily access electronic materials including journals, databases, books, online resources, and serials from almost anywhere. With the advent of electronic resources, problems with storage were no longer a concern, and the transition from paper to digital assets was smooth. An unanswered question in the field of library science is how digital drives affect service quality. When trying to gauge the efficacy and use of services among young adults, statistical methods perform less well. Derived on fuzzy set theory, the Fuzzy Analytical Hierarchical Process (FAHP) model is designed to tackle

the challenges associated with Multi-Criteria Decision Making (MCDM). To more accurately portray human agent judgements, the solution procedure makes use of fuzzy numbers. In order to assess the familiarity with and use of digital library infrastructures among students in Nigerian public schools, this article builds the FAHP model. For this research, we will develop a structured questionnaire and distribute it to students in Nigerian universities. Improving digital library use, investments, and service management might be possible with the help of the study's findings.

In this article, we will look at the present state and future prospects of digital library services. The ever-evolving nature of digital technology has forced libraries to adapt their services to meet patrons' needs. It primarily shows how digital library services are built to meet user expectations in numerous areas. Personalised services, web-based services, instructional services, and search engine services are all part of the digital library's offerings. The article explains what Web 3.0 and Web 4.0 are and how they work. Web 4.0 has limitless creative space, a library that is aware of its surroundings, and augmented reality. These services meet the needs of library patrons and improve the quality of library services overall. Ahammed Salim (2023)^[4].

One area that has been greatly affected by the rise of digital technology is the management and availability of course materials at universities and colleges. University libraries must adapt by implementing state-of-the-art digital services because of the critical role they play in the information distribution process. Modern innovations like the SiPINTAR app and an online repository system have made this shift noticeable at Bandung Islamic University (UNISBA). This study aims to examine how users' behavior regarding the acquisition of academic information has changed after the implementation of digital services. In order to describe the library's offerings and conduct interviews with seven current students and two librarians, the study used a descriptive qualitative approach. Digital services are more popular among students than conventional ones, according to the study, due to the convenience and accessibility they provide. Still, we have a way to go before we reach our goal, especially in terms of digital literacy and the breadth of available digital resources. Agus Rusmana (2025)^[5].

3. Research Methodology

3.1 Research Design

Design is the general plan or scheme that is used to perform a research study. It gives a structured way in which data are collected, analyzed and interpreted about the research problem. In this study, the researcher used descriptive and analytical method to study about the use and impact of digital library services. The study is designed to investigate the awareness, use, effectiveness and impact of digital library services among the higher education libraries users. Researchers, educators, and students have outlined the current state of digital library services and their use patterns using a descriptive study approach. Finding out how satisfied, knowledgeable, and enthusiastic users are with the digital library's materials and services is one of its functions. Also analyzed are the relationships between factors like how often people use the digital library, how easy it is to get to,

how well-known the services are, and how they affect students' and faculty's work in the classroom and the lab.

3.2 Sample Methods

You should expect to see two primary approaches to sampling: probability and non-probability. In a probability sample, the odds of selecting any given person from a population are always greater than zero. Sample Size we selected 85 faculty questions and 185 student questionnaires that will be filled out of 300 total questionnaires. The data will be collected using the convenience sampling method since all of the participating institutions will be AICTE certified and follow AICTE rules and regulations.

3.3 Data Collection

This inquiry will make use of both primary and secondary sources to compile its data.

Primary Data: Data will be collected from librarians, teachers, and students at a few selected engineering and management colleges. In addition to the methods mentioned above, the researchers will also use structured interviews to collect data from college administration and management.

Secondary Data: This data was obtained from secondary sources, such as books and papers collected from the shelves of technical education libraries and digital library services in India. We gathered some essential information about AICTE-approved colleges from the AICTE website, and further details will be sought from the mandatory disclosures of the institutions.

3.4 Population

Non-probability sampling involves selecting participants from a population using a non-random method. This class includes techniques including convenience sampling, snowball sampling, quota sampling, and judgment sampling. In this study, the researcher will employ a convenience sampling strategy, which is a non-probability sampling methodology.

4. Data Analysis

User expectations are evolving as a result of the emerging shift from traditional libraries to digital libraries. This calls for a methodical comprehension of user expectations and the application of appropriate change management techniques. Put simply, it is essential for library workers to understand how digital libraries are changing things and adapt their services to meet the changing needs of their patrons.

4.1 Status of Respondents

The bulk of people who utilize library resources are students and academic members employed by educational institutions. Out of 270 respondents, 31.48% are faculty members and the remaining 68.52% are students, according to the respondents' status as shown in Table.1.

Table 1: Status of Respondents

Sl. No.	Status	No of Respondents	Percentage (%)
1	Faculty	85	31.48
2	Students	185	68.52
Total		270	100.00

4.2 How Often Digital Library Is Visited?

According to a survey measuring library use, pupils are more likely to use digital libraries than teachers. A total of 185 students and 17 faculty members filled out the poll; 32.43 percent of the students and 17.65 percent of the faculty members said they would use the digital library every day. The digital library is also frequented by 30.27

percent of students and 16.47 percent of faculty, according to the poll. A further 23.78 percent of students who took the survey planned to use the online library at least once per week. Nearly 40% of teachers said they used the online library at least once a week. The study clearly showed that compared to teachers, students are far more likely to use digital library resources.

Table 2: How Often the Respondents Visit Digital Library?

Sl. No.	Frequency	No of Respondents		Percentage (%)		Total Percentage (%)
		F	S	F	S	
1	(i) Daily	15	60	17.65	32.43	27.77
2	(ii) Once in two days	14	56	16.47	30.27	25.93
3	(iii) Once in a week.	31	44	36.47	23.78	27.77
4	(iv) Once in a month.	15	10	17.65	5.41	9.26
5	(v) Rarely.	5	15	5.88	8.11	7.41
6	(vi) Never.	5	Nil	5.88	Nil	1.86
7	(vii) Any other (please specify)	Nil	Nil	Nil	Nil	Nil
Total		85	185			100.00

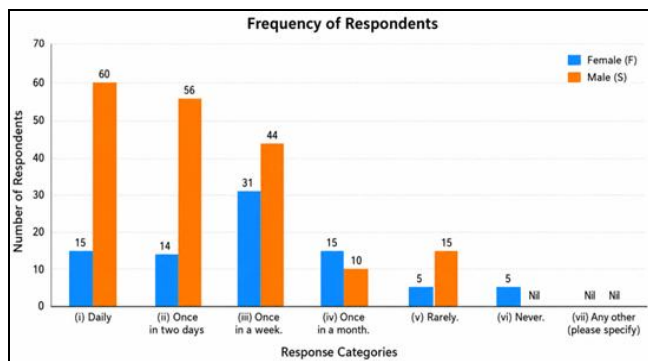


Fig 1: How Often the Respondents Visit Digital Library?

4.3 Digital Library Working Hours

In response to inquiries regarding the operational hours of the digital library, it was revealed that 56.22% of the students surveyed deemed the timings convenient, whereas 57.65% of the faculty members indicated that the timings are inconvenient. While half of the poll respondents find the digital library hours convenient, the other half voiced dissatisfaction. An additional analysis of the statistics suggests that the digital library hours are inconvenient for the faculty members. This may be due to faculty members dedicating more time to class preparation or laboratory work during institutional hours, so limiting their ability to use the digital library following their demanding schedules.

Table 3: Opinion about Digital Library Working Hours

Sl. No.	Particulars	No of Respondents		Percentage (%)		Total Percentage (%)
		F	S	F	S	
1	Convenient	36	104	42.35	56.22	51.85
2	Inconvenient	49	81	57.65	43.78	48.15
Total		85	185			100.00

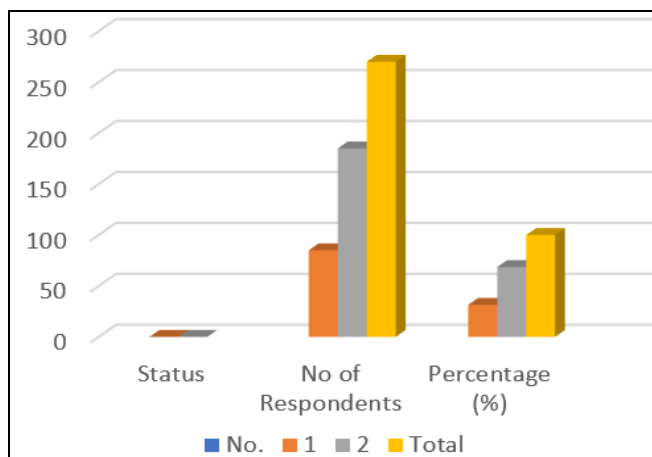


Fig 2: Opinion about Digital Library Working Hours

4.4 Special Services

Users of digital libraries can access a variety of unique services. These include access to online journals, audio-visual materials, e-book services, e-abstracting, indexing,

and more. An attempt was made in this research to ascertain the level of awareness about the availability of various digital library services. Users' knowledge of and engagement with digital libraries vary, despite the fact that most provide a variety of services. Even if they are aware of the library's resources, some users may not be making use of them. According to the study, more than 80% of users in the category of faculty members are aware that their libraries provide digital services in the areas of current journals (90.59%), audiovisual resources (82.35%), catalogue services (83.53%), and literature search (82.35%). Both instructors (85.88%) and students (87.57%) have access to email services. Another well-liked service that students are more aware of (95.26%) is Question Bank. In a similar vein, 88.65% of students and 68.24% of faculty members surveyed said they were aware of e-book services. Both students and faculty members are often less aware of table of contents services, digital library websites, and e-abstracting/indexing. Overall, this study shows that consumers are aware of the several unique features offered by digital libraries.

Table 4: Special Services Offered by Digital Libraries

Sl. No.	Services	Yes		No		Not Aware	
		F	S	F	S	F	S
1	To read current Journals.	77 (90.59)	163 (88.11)	8 (9.41)	22 (11.89)	Nil	Nil
2	To use audio visual resources.	70 (82.35)	140 (75.68)	15 (17.65)	45 (24.32)	Nil	Nil
3	To search information in catalogue.	71 (83.53)	154 (83.24)	14 (16.47)	31 (16.76)	Nil	Nil
4	To send e-mail.	73 (85.88)	162 (87.57)	12 (14.12)	23 (12.43)	Nil	Nil
5	To prepare for competitive exams.	34 (40.00)	164 (88.65)	46 (54.12)	9 (4.86)	5 (5.88)	12 (6.49)
6	Literature search	70 (82.35)	168 (90.81)	8 (9.41)	17 (9.19)	7 (8.24)	3 (1.62)
7	E-book services	58 (68.24)	164 (88.65)	26 (30.59)	14 (7.57)	1 (1.18)	7 (3.78)
8	E-abstracting/indexing	33 (38.82)	95 (51.35)	36 (42.35)	42 (22.70)	16 (18.82)	48 (25.95)
9	E-newspaper	62 (72.94)	125 (67.58)	8 (9.41)	11 (5.95)	15 (17.65)	49 (26.49)
10	Downloading information from the internet	71 (83.53)	169 (91.35)	14 (16.47)	16 (8.65)	Nil	Nil
11	Table of content services	35 (41.18)	67 (36.22)	28 (32.94)	59 (31.89)	22 (25.88)	59 (31.89)
12	Question bank service	81 (95.29)	155 (83.78)	4 (4.71)	26 (14.05)	Nil	Nil
13	Digital library websites	23 (27.06)	36 (19.46)	24 (28.24)	62 (33.51)	38 (44.71)	87 (47.02)

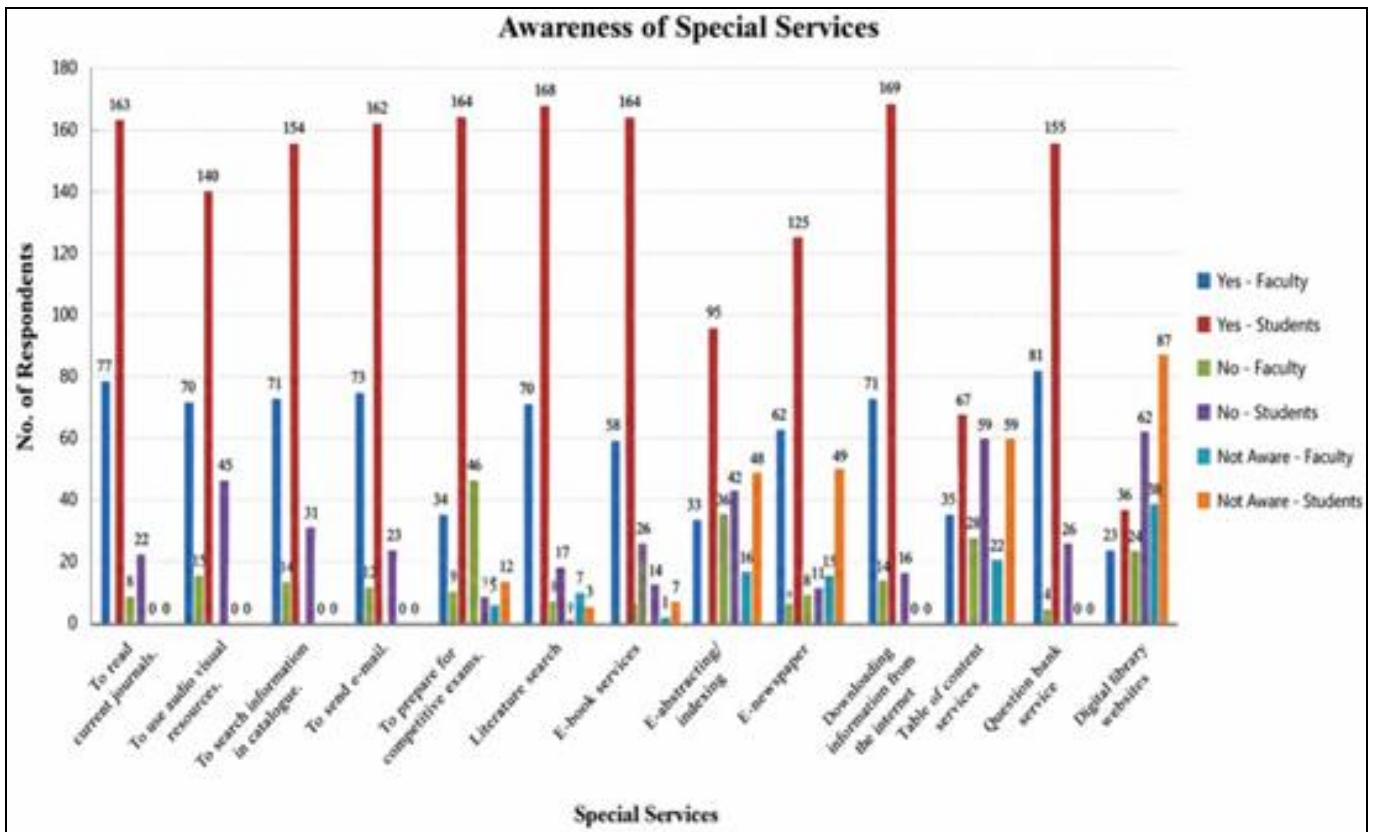


Fig 3: Special Services Offered by Digital Libraries

4.5 Utilization of Library Services

In this study, an attempt was made to find out how often the responding libraries' special digital library services are used. People were asked to rate how often they used different library services on a five-point scale ranging from 0 (not at all) to 4 (very much). Three eighty-two percent of staff members polled said they use the current digital journals service to a "large extent," and 36.22 percent of students said the same. Access to a variety of audiovisual resources is yet another function provided by the digital libraries. Approximately one-third of the study's respondents-32.94% of faculty members and 33.51% of students-said they use this service "very little." Additionally, 26.49% of respondents from the student category and 30.59% of respondents from the teacher category said they use audio-video resource services "some extent." A careful

examination of the comments indicates that one aspect that may be deterring customers from using this service is the accompanying infrastructure, such as providing the digital library with appropriate furniture and ambiance. In a similar vein, it has been noted that underutilization of this service is caused by the lack of high-quality headphones for all users. One of the key services offered by digital libraries is the ability for users to search for the content they want-a catalogue search function. It was also discovered that the individual only sometimes used this service. In this survey, 37.65% of faculty members and 31.35% of students said they had used the service "some extent," while 21.18% and 25.41% of faculty and student respondents, respectively, said they had used it "largely." Sending emails using the digital library appears to be the most popular option among students and professors. 24.71% and 34.12% of faculty

members, respectively, utilize the digital library to send emails to a "large extent" and "very large extent." It has been shown that around 59% of the academic members make use of the digital library service for the purpose of sending and receiving emails. Students in this survey followed a similar trend, with 21.08% utilizing this service to a "large extent" and 35.68% to a "very large extent."

4.6 Obtaining Information from Web Search

For people to be aware of and make use of these services, libraries that facilitate the acquisition of such information via internet searches must be readily available. This being the case, we wanted to know how the respondents felt about

doing research on the internet. Out of the total number of students and faculty members polled, 56.22 percent said they are "largely" relying on online resources for their research. Furthermore, among both students and faculty, 34.12% said that they are "very largely" obtaining the information they need from online searches. Over seventy percent of faculty and students and staff members who took the poll are proficient users of digital library resources, including online search engines.

To find out how much information was retrieved from online searches based on the kind of user (professor vs. students), a Chi Square test was used. According on the Chi Square test, there is a substantial difference between users.

Table 5: Opinion about Obtaining Information from Web Search

Sl. No.	Opinion	No of Respondents		Percentage (%)		Total Percentage (%)
		F	S	F	S	
1	(i) Very Large Extent	29	26	34.12	14.05	20.37
2	(ii) Large Extent	36	104	42.35	56.22	51.86
3	(iii)Some Extent	12	33	14.12	17.84	16.66
4	(iv) Very little Extent	8	22	9.41	11.89	11.11

Table 6: Opinion about Obtaining Information from Web Search

Opinion	No of Respondents		Total	Expected Frequency	
	F	S		F	S
(i) Very Large Extent	29	26	55	17.3	37.7
(ii) Large Extent	36	104	140	44.1	95.9
(iii)Some Extent	12	33	45	14.2	30.8
(iv) Very little Extent	8	22	30	9.4	20.6
Total	85	185	270	Chi-square p-value	

5. Conclusion

With the advent of technology in academic circles, the concept of digital libraries has been introduced to facilitate efficient sharing, access, and use of academic information. The results of the study conducted in this regard show that digital libraries have played a vital role in enhancing learning and research processes among both students and lecturers in higher education institutions. The presence of e-books, online journals, literature searching tools, question banks, and other types of web resources has made information easily accessible while overcoming some of the disadvantages of traditional library services. It was found out that students make a greater number of queries in terms of digital library usage, showing that learners heavily rely on these types of services in their studies. It has been proven that most respondents knew about all the possible services offered by digital libraries and understood their importance. The research shows that digital libraries positively impact learners' academic progress by providing up-to-date information on time. However, some factors such as lack of awareness regarding particular services offered, inadequate infrastructural support, and insufficient digital competence may be considered as drawbacks preventing from the optimal use of digital libraries.

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