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DETERMINANTS OF USERS AWARENESS AND SATISFACTION WITH DIGITAL RESOURCES AND SERVICES: A QUANTITATIVE APPROACH

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Abstract

Purpose: *This study aims to assess the familiarity of students with the digital resources and digital services offered by the central library of Peshawar University. The key objectives were to determine users' awareness and to assess their level of satisfaction with these resources and services.*

Methodology: *A quantitative research approach was adopted using the survey method. The study population included BS, MS/MPhil, and PhD students. Data were collected through a structured questionnaire, designed after a thorough literature review and refined via pre-testing and pilot testing. Using convenience sampling, over 400 questionnaires were distributed, with 355 valid responses obtained (92% response rate). Data analysis was conducted using SPSS (2024), applying frequency analysis and chi-square tests to identify relationships among variables.*

Findings: *The results showed high awareness of research databases and OPAC. A significant relationship was found between academic qualification and awareness/satisfaction with digital resources and services. Students reported the highest satisfaction with research databases, e-journals, OPAC, and Current Awareness Services (CAS).*

Originality/Value: *The findings highlight the need for improved promotion of digital services, particularly among undergraduate students. The study recommends targeted outreach through orientations, emails, and social media, as well as introducing a 3-credit-hour course on library and digital resource usage in departmental curricula.*

INTRODUCTION

Librarianship is a profession that deals with the administration and distribution of information resources in libraries. It is a service-oriented job and an essential component of society. With the advent of new technology, the role of librarianship has changed dramatically (Chowdhury, 2008). It is a noble profession that works with knowledge distribution and supports social, economic, and cultural advancement (Shafique, 2007). The development of librarianship in Pakistan is influenced by cultural, political, and social systems. Therefore, understanding Pakistan's educational system and library development is essential. School, college, and university libraries play a vital role in supporting classroom instruction and lifelong learning. Since independence, Pakistan has faced many challenges in improving the education system, especially due to financial constraints. The Education Policy 2002 recognized the importance of libraries in lifelong learning. Libraries serve as cultural centers and provide access to knowledge for all. The Higher Education Commission (HEC) has contributed to the improvement of higher education and the LIS profession by launching the Digital Library, Book

Bank Scheme, refresher courses, workshops, and librarian conferences (Haider, 2008).

The central Library of the University of Peshawar provides various traditional and digital resources and services to support academic and research activities. These include digital collections such as e-books, e-journals, multimedia resources, and services like OPAC, RFID, and citation management tools. Despite technological advancements and infrastructure upgrades funded by the Higher Education Commission (HEC), there remains a significant gap in users' awareness and satisfaction with these digital offerings (Khan & Ahmed, 2016; Jan, Bahader, & Rehman, 2021). Globally, academic libraries have transitioned from physical repositories to virtual portals, facilitating faster and remote access to scholarly information, which improves information literacy and academic productivity (Habiba & Ahmed, 2020; Bhoi, 2017; Bolarinwa, 2019). However, in Pakistan, challenges such as limited funding, insufficient ICT infrastructure, and low digital literacy hinder the full utilization of these resources (Warraich & Tahira, 2009; Mittal & Sharma, 2013). Previous studies at the University of Peshawar reveal that users primarily visit the library for physical materials and have limited engagement with digital resources (Khan et al., 2014). Furthermore, digital services including virtual reference, remote helpdesks, and library automation systems are underutilized due to lack of awareness and training (Amjad Khan et al., 2014; Jan et al., 2021; Siregar & Syam, 2024). The University library has improved systems such as KOHA and RFID and trained staff, but the absence of updated information on the university website and insufficient user orientation continue to limit access (Tahir et al., 2021). Therefore, assessing users' familiarity and satisfaction with digital resources and services is essential to identify gaps and improve service delivery. This study addresses this need by evaluating the awareness and satisfaction levels of the library's diverse users, aiming to enhance the library's contribution to academic and research success.

THEORETICAL SUPPORT FOR THE STUDY

The most appropriate theory for this study is the Information Systems Success Model (ISSM) by DeLone and McLean (1992; updated in 2003). It provides a framework for evaluating system effectiveness through system quality, information quality, service quality, use, user satisfaction, and net benefits (Zaineldeen, Hongbo, & Koffi, 2020). System quality and service quality relate to facility access; information quality addresses resource availability. Service quality and user satisfaction help assess how users perceive library services and whether they are satisfied with resources and services.

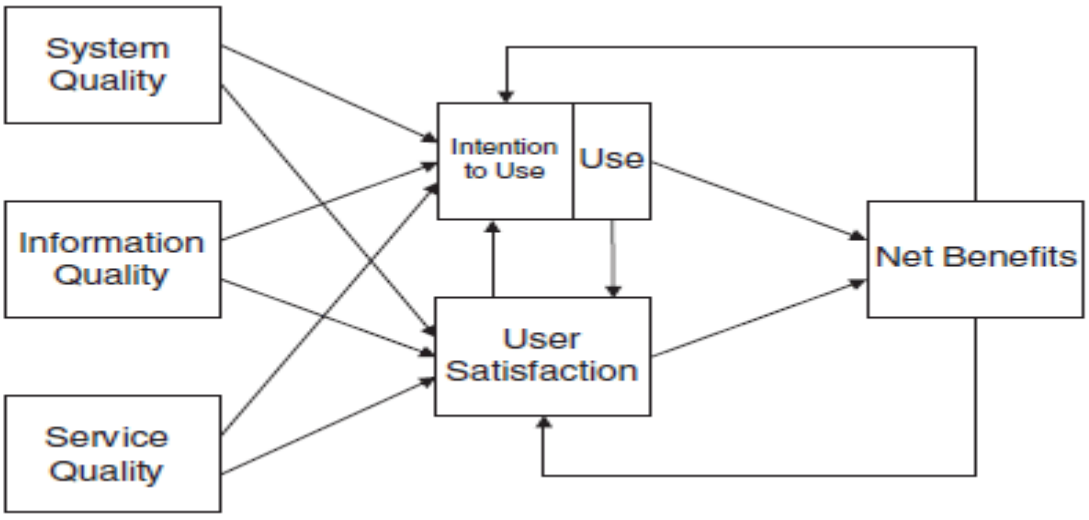

Figure 1: DeLone and McLean IS Success Model

In the context of libraries, this theory is highly applicable if the system quality, information quality, and service quality are good enough it will directly increase the usage of the library and the satisfaction of

users with the library offerings (resources and services), and if the library users are satisfied with the library and regularly using a library it will overall affect the research productivity, academic upliftment, and librarians job performance. By applying this model in my research study can systematically evaluate the user's familiarity and academic engagement.

Research Objectives

The research objectives of the proposed study are as under:

1. To know the current level of the users' awareness regarding digital resources and digital services offered by the central library at the University of Peshawar.
2. To explore the extent of the users' satisfaction with the digital resources and digital services offered by the central library at the University of Peshawar.

LITERATURE REVIEW

The University of Peshawar, initially housed in the Government Training School building, has evolved into one of Pakistan most esteemed universities, particularly in Khyber Pakhtunkhwa. It currently includes two schools, two colleges, 47 departments, and six centers of excellence, with foundational departments such as Mathematics, Economics, Law, Arabic, Urdu, and Pashto, alongside specialized institutions like the College of Home Economics and Quaid-e-Azam College of Commerce (Jan et al., 2021). The university has contributed significantly to the advancement of the humanities, arts, and sciences by nurturing academics, researchers, and professionals who impact both national and international scholarship (Khan et al., 2014).

Central Library of the University of Peshawar

The Central Library boasts over two million well-organized books, serving students and staff with essential facilities including access to computers, the Internet, and email. It houses a rich collection of oriental and rare manuscripts, including over 700 valuable manuscripts donated by Ghulam Samdani, covering Arabic, Persian, Urdu, and Pashto languages, as well as materials on local history and tribal customs of Khyber Pakhtunkhwa (Khan & Bhatti, 2015; Haseeb & Jan, 2017). Despite these resources, studies reveal challenges related to user satisfaction and resource utilization. Khan (2004) found that users were generally content with basic amenities but dissatisfied with outdated reading materials, limited access to recent journals, poor reference tools, and slow internet services. The study emphasized the need for enhanced orientation and awareness programs, as many students depended mainly on textbooks rather than exploring the broader range of library materials. Similarly, Ahmad and Gul (2020) investigated the underutilization of the Central Library, identifying factors such as the library's distance from academic departments (80%), slow internet (75.2%), lack of promotion (73.9%), ignorance of available services (63.2%), and inadequate professional staff (69.7%) as major contributors to low usage. Students often preferred obtaining information from teachers, peers, and online sources rather than the library itself. The study recommends improved marketing, user training, infrastructure upgrades, and better resource availability to transform non-users into active patrons.

Departmental Libraries

Departmental or seminar libraries at the University of Peshawar function as subdivisions of the Central Library but maintain their own physical locations and subject-specific collections. These libraries cater directly to the staff and students of their respective faculties. Compared to the central library, seminar libraries often have fewer resources and staff. The rapid growth of information and communication technology offers opportunities for enhanced cooperation between central and seminar libraries, potentially improving services and academic support (Ullah, 2015).

The university hosts 48 seminar libraries equipped with thousands of print and electronic journals, unpublished theses, and dissertations submitted as academic requirements (Ismail & Idrees, 2019). Khan and Bhatti (2012) surveyed 28 departmental libraries, revealing that while most libraries have cataloged and classified collections, only a small percentage utilize automation technologies such as barcodes, OPAC, or automated circulation. Core services like book lending and reference assistance were common; however, advanced services like interlibrary loans and reprography were rarely available. The study also highlighted funding shortages, insufficient space, and limited infrastructure as significant issues, with many

libraries operating on budgets as low as Rs 50,000 to Rs 100,000 annually. Respondents stressed the need for increased funding, skilled staff, IT infrastructure upgrades, automation, and better access to digital resources.

Jan et al. (2020) further evaluated seminar libraries in the Faculty of Life and Environmental Sciences, finding that 47.4% of users visited daily, with female students showing higher usage rates than males. Most users expressed satisfaction with available resources and services, although Ismail and Idrees (2020) noted ongoing problems such as low student utilization, outdated collections, poor physical facilities, lack of skilled staff, and reliance on teacher recommendations for book selection. To address these challenges, they recommended improved funding, better collection management, enhanced facilities, and initiatives promoting information literacy.

Status of the Central Library

Founded in 1951 and relocated multiple times before settling in the Administration Block in 1957, the Central Library remains a critical academic resource center, offering access to diverse media and transitioning from a traditional to a more automated and digital model (Jan et al., 2021). Hussain and Jan (2021) ranked the Central Library third among nineteen public university libraries in Khyber Pakhtunkhwa, based on digital resources, automation, and services, highlighting its relative strength but also the need for ongoing technological advancement.

User evaluations by Asad (2004) acknowledged the Central Library's pivotal role in supporting research and education but also pointed out dissatisfaction with outdated materials, insufficient automation, and limited internet access. Amjid et al. (2014) similarly found that although students primarily visit the library for course readings, theses, and reference materials, issues such as poor physical facilities and lack of electronic resources persist. Nonetheless, the library has made notable strides by digitizing collections, expanding e-resource access, and serving as a United Nations document repository.

Jan (2021) provides a recent snapshot of the library's resources, including approximately 192,548 books, 30 subscribed journals, 21 newspapers, over 22,000 master's theses, and nearly 4,000 doctoral dissertations, alongside 700 rare manuscripts in multiple languages. Digital resources are accessible through national programs, with services such as circulation, reference, computing, Wi-Fi, reprography, and reading areas. The library also hosts workshops and seminars to build professional capacity.

Despite these advancements, infrastructure challenges remain, including insufficient ICT tools, lack of advanced technologies like RFID and barcode systems, and slow internet speed. Recommendations emphasize upgrading the digital infrastructure, expanding electronic resources, improving physical space, enhancing internet access, providing staff training, extending library hours, and integrating central and departmental libraries for better resource sharing. Zahra, Hanif, and Shah (2024) also highlight technology adoption across public university libraries in Khyber Pakhtunkhwa, noting varying degrees of automation and the persistent shortage of skilled IT personnel needed to manage digital services effectively. The study underscores the importance of raising student awareness and motivation toward utilizing advanced digital library resources.

METHODOLOGY & RESULTS

This study employs a descriptive research design and a quantitative methodology to assess user awareness and satisfaction with digital resources and services at the University of Peshawar Central Library (Chun Tie et al., 2019; Dannels, 2018). Data were collected via a structured questionnaire, developed through literature review, expert validation, and pilot testing, with responses measured on a Likert scale ranging from "Very familiar" to "Not at all familiar" (Krosnick, 2017; Fife-Schaw, 2020). Convenience sampling was used due to an unknown population size, and the sample size of 385 was calculated using Cochran's formula (Cochran, 1963; Etikan et al., 2016). This statistical formula is used to find out sample size from unknown population. The survey was administered in person over one week at the library to maximize response rates. Data were analyzed using SPSS with descriptive statistics (mean, median, mode, frequencies) and inferential tests (t-test, ANOVA) to identify significant patterns in user awareness and satisfaction (Levitt et al., 2018). The

reliability of the instrument was confirmed with Cronbach's alpha values above 0.7 following a pilot test with 50 users.

The statistical equation is defined as n is the sample size, Z2 is the level of assurance that 95% is equal to 1.96, e is the chosen level of exactness, p is the predicted amount of characteristic in the population, and q is 1-p.

$$n=Z^2 * p*(1-p)/e^2$$

Where n represents the required sample size,

- **Z =** 1.96: corresponding to a 95% confidence level.
- **P** = 0.5: assume proportion for maximum variability.
- **e** = 0.05: desired margin of error (5%).

Putting values in the above equation,

n = (1.96)2 * (0.5) * (1-0.5)/ (0.05)2

n=3.8416 * 0.25/ 0.0025

n= 385

Thus, according to the above formula, the sample size for this proposed study from the unknown population is 385.

DEMOGRAPHIC INFORMATION

The statistical data presented in Table 1 provides a comprehensive overview of the demographic characteristics of the respondents. Out of the total responses received, 202 respondents were male (56.9%) and 153 were female (43.1%). Age-wise data shows that the majority of respondents were under 25 years old (n=290, 81.7%), followed by those aged 26–30 (n=44, 12.4%), 31–35 (n=12, 3.4%), 36–45 (n=8, 2.3%), and above 46 (n=1, 0.3%). Regarding academic qualifications, the highest number of participants were B.S. students (n=277, 78%), followed by M.S./M.Phil. scholars (n=58, 16.3%), while the lowest participation came from PhD scholars (n=20, 5.6%).

Table 1: Demographic Characteristics of the Respondents

Gender	**Male**	**202**	**56.9%**
	Female	**153**	**43.1%**
Age Group	Less than 25 years	290	81.7%
	26 – 30 years	44	12.4%
	31 – 35 years	12	3.4%
	36 – 45 years	8	2.3%
	Above 46 years	1	0.3%
Qualification	B.S. Students	277	78.0%
	M.S. / M.Phil. Scholars	58	16.3%
	PhD Scholars	20	5.6%
Total Respondents	–	355	100%

Frequency of Library Use

Figure 1 presents data on the frequency of library visits by students at the University of Peshawar. The responses were categorized into four groups: daily, weekly, monthly, and rarely. The results show that the majority of students visit the library on a daily basis, with 123 respondents (34.6%) indicating this frequency. This is followed by weekly visits, reported by 104 students (29.3%). A smaller portion of students, 43 (12.1%), visit the library monthly, while 85 students (23.9%) reported that they rarely use the library. These findings suggest that although a good number of students are regular users of the library, there remains a significant portion who either visit occasionally or rarely, which may reflect differences in academic needs, access to digital resources, or awareness of available services.

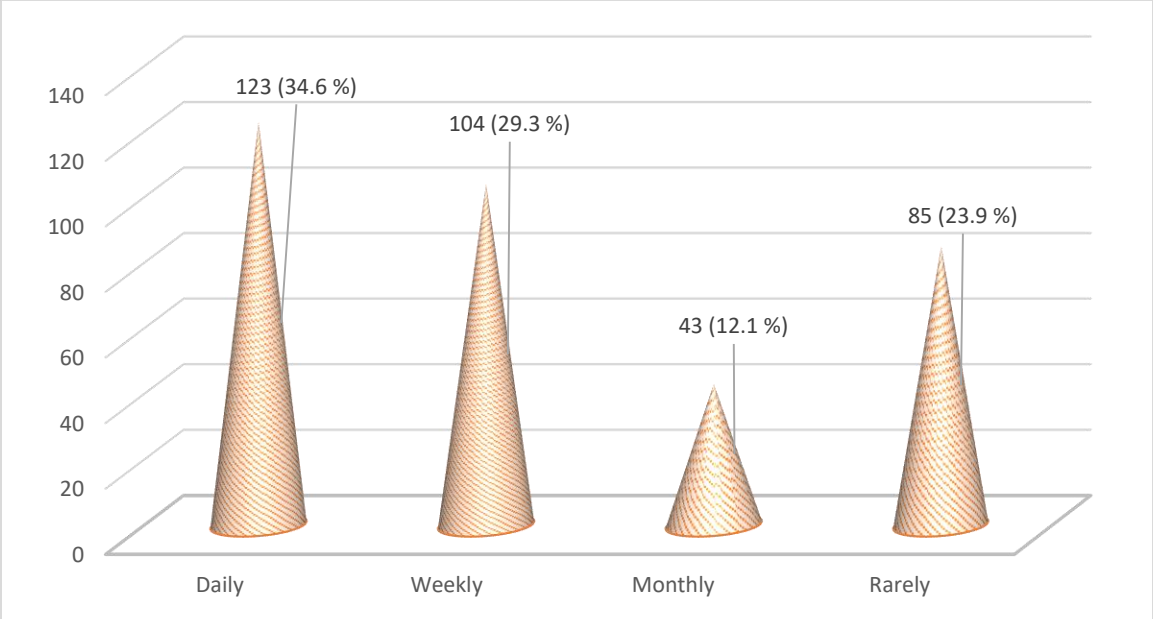

Figure 1. Frequency-Wise Result

RO1. To know the current level of the users' awareness regarding digital resources and digital services offered by the central library at the University of Peshawar.

Table 2 presents the findings related to the users' awareness of digital resources available at the Central Library, University of Peshawar. The data shows that awareness levels vary significantly across different digital resources. For instance, a relatively higher number of users are aware of E-books and Research Databases. About 34.9% of respondents reported that they are not at all aware of E-books, while 34.4% indicated slight awareness. On the other hand, resources like Digital Archives and Research Data Sets reflect low awareness among users, with 54.9% and 50.7% respectively stating they are not at all aware of these resources. Similarly, only a small percentage of respondents reported being highly aware of tools like Citation Management Tools (3.9%) and AI Detection Tools (7.6%). The data also highlights that Open Access Resources and E-journals have moderate awareness levels among users. These findings suggest that although some digital resources are known to users, many valuable tools and databases remain underutilized due to a lack of awareness. Therefore, the library administration should consider conducting orientation sessions, workshops, or awareness campaigns to enhance students' knowledge and encourage the effective use of digital resources.

Table 2: Awareness about Digital resources

#.	Library digital resources	1	2	3	4	5
		%	%	%	%	%
1	E-books	124(34.9)	122(34.4)	51(14.4)	26(7.3)	32(9.0)
2	E-journals	75(21.1)	55(15.5)	110(31.0)	67(18.9)	48(13.5)
3	Research Databases	63(17.7)	55(15.5)	74(20.8)	83(23.8)	80(22.5)
4	Digital Repositories	148(41.7)	88(24.8)	54(15.2)	51(14.4)	14(3.9)
5	Open Access Resources	81(22.8)	52(14.6)	82(23.1)	95(26.8)	45(12.7)
6	Multimedia Content	128(36.1)	101(28.5)	79(22.3)	38(10.7)	9(2.5)

7	Digital archive	195(54.9)	57(16.1)	54(15.2)	35(9.9)	14(3.9)
8	Research Data Sets	180(50.7)	59(16.6)	38(10.7)	48(13.5)	30(8.5)
9	(ETDs)	103(29)	85(23.9)	85(23.9)	75(21.1)	7(2.0)
10	Research Guides	150(42.3)	57(16.1)	76(21.4)	62(17.5)	10(2.8)
11	AI Detection	71(20)	97(27.3)	115(32.)	45(12.7)	27(7.6)
12	Citation Management Tools	112(31.5)	108(30.4)	71(20.0)	50(14.1)	14(3.9)

1=Not at all, 2=slightly aware, 3=somewhat aware, 4=moderately aware, 5=highly aware.

Awareness about the Digital Services

Table 3 presents the respondents' awareness of digital services offered by the Central Library. The results show mixed levels of awareness depending on the service. The Online Public Access Catalogue (OPAC) was the most recognized, with 40.3% of users being highly aware and only 13% not aware at all. Remote access to the library also showed a relatively balanced distribution, with 28.5% moderately aware and 10.7% highly aware. In contrast, virtual reference services and digital literacy training showed poor awareness levels. Nearly 40% of respondents were not aware of virtual reference services, and 43.9% were unaware of digital literacy training opportunities. Services like plagiarism detection tools, research consultation, and online book reservation had low awareness as well, with a majority of users either not aware or only slightly aware. For example, 48.5% of users reported no awareness of research consultation services. Similarly, many respondents were unfamiliar with tools like RFID (21.4% not aware), LMS (16.6% not aware), and CAS (17.7% not aware). Overall, the data suggests that while some digital services are known and used, a significant number of students and library users lack awareness of the full range of digital services available to them. The library should consider targeted awareness campaigns and workshops to ensure these services are fully utilized.

Table 3. ***Awareness about the Digital Services***

s.no.	Library digital resources	1	2	3	4	5
		%	%	%	%	%
1	OPAC	46(13)	29(8.2)	51(14.4)	86(24.2)	143(40.3)
2	Remote Access to Library	46(13)	83(13.4)	87(24.5)	101(28.5)	38(10.7)
3	Virtual Reference Services	140(39.4)	80(22.5)	94(26.5)	29(8.2)	12(3.4)
4	24/7 Access to E-resources	85(23.9)	75(21.1)	96(27)	71(20)	28(7.9)
5	Digital Literacy Training	156(43.9)	71(20)	79(22.3)	25(7.0)	24(6.8)
6	Plagiarism Detection & AI	91(25.6)	89(25.1)	72(20.3)	70(19.7)	33(9.3)
7	Research Consultation	172(48.5)	44(12.4)	69(19.4)	62(17.5)	8(2.3)
8	Online Book Reservation	58(16.3)	44(12.4)	129(36)	94(26.5)	30(8.5)
9	CAS	63(17.7)	70(19.7)	83(23.4)	83(23.4)	56(15.8)
10	RFID	76(21.4)	49(13.4)	105(30)	95(26.8)	30(8.5)
11	LMS	59(16.6)	117(33)	63(17.7)	82(23.1)	34(9.6)

1=Not at all, 2=slightly aware, 3=somewhat aware, 4=moderately aware, 5=highly aware.

RO2. To explore the extent of the users' satisfaction with the digital resources and digital services offered by the central library at the University of Peshawar.

The second objective of the research is also divided into two parts for separate analysis of the collected data, Table 5 (satisfaction with digital resources) and Table 5 (satisfaction with digital services) Table 4 illustrates the extent of users' satisfaction with the digital resources provided by the Central Library, University of Peshawar. The findings reveal that satisfaction levels vary across different types of resources. A considerable number of respondents were not at all satisfied with several resources. For

example, 36.1% of users were not satisfied with e-books, followed by 25.6% slightly satisfied, and only 12.7% were highly satisfied. In contrast, research databases received relatively better feedback, with 26.5% of respondents highly satisfied and 25.1% moderately satisfied, indicating a more positive user experience. E-journals also showed moderate satisfaction, with 27.3% moderately satisfied and 19.7% highly satisfied. However, satisfaction with resources like digital repositories, multimedia content, digital archives, and research data sets was generally low. For instance, 47.3% of users were not at all satisfied with digital archives, and 45.4% expressed dissatisfaction with research data sets. Similarly, ETDs (Electronic Theses and Dissertations) and research guides had low satisfaction scores, with fewer than 10% of users reporting high satisfaction. In the case of modern tools, such as AI detection and citation management tools, satisfaction remained limited; only 9.3% and 7.9% of users, respectively, were highly satisfied.

These findings indicate that while a few digital resources are meeting user expectations—particularly research databases and e-journals—many others are not. The low levels of satisfaction may be due to poor accessibility, lack of user training, technical difficulties, or limited awareness. These results highlight the need for the library to improve the quality, usability, and promotion of digital resources to enhance user satisfaction.

Table 4: ***Satisfaction with the digital resources***

s.no.	library digital resources	1	2	3	4	5
		%	%	%	%	%
1	E-books	128(36.1)	91(25.6)	55(15.5)	36(10.1)	45(12.7)
2	E-journals	68(19.2)	52(14.6)	68(19.2)	97(27.3)	70(19.7)
3	Research Databases	42(11.8)	65(18.3)	65(18.3)	89(25.1)	94(26.5)
4	Digital Repositories	126(35.5)	74(20.8)	104(29.3)	31(8.7)	20(5.6)
5	Open Access Resources	56(15.8)	64(18)	100(28.2)	94(26.5)	41(11.5)
6	Multimedia Content	153(43.1)	62(17.5)	77(21.7)	54(15.2)	9(2.5)
7	Digital archive	168(47.3)	66(18.6)	89(25.1)	25(7.0)	7(2.0)
8	Research Data Sets	161(45.4)	64(18.0)	72(20.3)	43(12.1)	15(4.2)
9	(ETDs)	87(24.5)	97(27.3)	78(22.0)	64(18.0)	29(8.2)
10	Research Guides	135(38.0)	85(23.9)	83(23.4)	24(6.8)	28(7.9)
11	AI Detection	63(17.7)	104(29.3)	98(27.6)	57(16.1)	33(9.3)
12	Citation Management Tools	102(28.7)	100(28.2)	68(19.2)	57(16.1)	28(7.9)

1=Not at all, 2=slightly satisfied, 3=somewhat satisfied, 4=moderately satisfied, 5=highly satisfied

Table 5 shows differing levels of satisfaction with the digital resources offered by the central library of the University of Peshawar. Just 12.7% of people are highly pleased with e-books, while 36.1% were not at all happy. For e-journals, 19.2% reported no satisfaction and 19.7% expressed strong satisfaction. The highest satisfaction rates are seen in research databases, where 26.5% are quite happy and 11.8% are not at all satisfied. Only 5.6% of respondents are extremely pleased with digital repositories or institutional repositories, while 35.5% are not at all satisfied. The degree of satisfaction with open access resources is modest, with 11.5% reporting great satisfaction and 15.8% expressing no happiness at all. Regarding multimedia content, only 2.5% were quite satisfied, and 43.1% not at all satisfied. Only 2% of respondents were satisfied with digital archives, while 47.3% are not at all satisfied. For the Research data sets, 4.2% reported high levels of satisfaction, and 45.4% expressed no pleasure at all. Responses to online theses and dissertations (ETDs) are uneven, with 8.2% expressing high satisfaction and 24.5% expressing no satisfaction at all. For research guides, 38% of respondents are not at all satisfied, and only

7.9% are highly satisfied. About 9.3% were highly satisfied with AI detection tools, whereas 17.7% were not at all satisfied. In Citation management tools, 7.9% demonstrate they are very satisfied, and 28.7% say they are not at all satisfied.

Table 5: ***Satisfaction with the library's digital services***

S.No.	Library Digital Services	1	2	3	4	5
		%	%	%	%	%
1	OPAC	49(13.8)	26(7.3)	53(14.9)	83(23.4)	144(40.6)
2	Remote Access to Library	64(18.0)	53(14.9)	79(22.3)	97(27.3)	62(17.5)
3	Virtual Reference Services	158(44.5)	89(25.1)	52(14.6)	36(10.1)	20(5.6)
4	24/7 Access to E-resources	91(25.6)	72(20.3)	73(20.6)	86(24.2)	33(9.3)
5	Digital Literacy Training	141(39.7)	70(19.7)	84(23.7)	54(15.2)	6(1.7)
6	Plagiarism Detection & AI	67(18.9)	57(16.1)	129(36.3)	60(16.9)	42(11.8)
7	Research Consultation	154(43.4)	74(20.8)	64(18.0)	54(15.2)	9(2.5)
8	Online Book Reservation	57(16.1)	78(22)	111(31.1)	74(20.8)	35(9.9)
9	CAS	63(17.7)	67(18.9)	77(21.7)	110(31)	38(10.7)
10	RFID	58(16.3)	64(18)	97(27.3)	73(20.6)	73(20.6)
11	LMS	58(16.3)	92(25.9)	91(25.6)	54(15.2)	60(16.9)

1=Not at all, 2=slightly satisfied, 3=somewhat satisfied, 4=moderately satisfied, 5=highly satisfied

Awareness of Digital Resources by Frequency of Library Use

Table 6 presents the relationship between how often users visit the library and their level of awareness regarding digital resources. Among those who visit the library daily, 17.1% are highly aware, while 57.7% are less aware, and 25.2% are moderately aware. Users who visit weekly show a slightly different pattern, with 13.5% highly aware, 38.5% moderately aware, and 48.1% less aware. For monthly visitors, only 4.7% are highly aware, and a significant 67.4% fall under the less aware category, indicating limited engagement with digital resources. Similarly, users who rarely visit the library also show low levels of awareness, with only 14.1% highly aware and 55.3% less aware.

A chi-square test was applied to assess whether there is a statistically significant relationship between the frequency of library visits and awareness of digital resources. The result (χ^2 = 9.185, df = 6, p = 0.163) indicates that the relationship is not statistically significant, as the p-value is greater than 0.05. This suggests that while daily users tend to be slightly more aware than others, library visit frequency alone does not have a strong or significant influence on users' awareness of digital resources.

Table 6: Frequency of Library use Based Chi Square and Cross-Tabulation on Awareness of Digital Resources

s.no.	**Frequency of Library Use**	**Digital resources**		
		Less aware (%)	**Moderately aware (%)**	**Highly aware (%)**
1	Daily	71(57.7)	31(25.2)	21(17.1)
2	Weekly	50(48.1)	40(38.5)	14(13.5)
3	Monthly	29(67.4)	12(27.9)	2(4.7)
4	Rarely	47(55.3)	26(30.6)	12(14.1)
	χ^2 Value χ^2 = 9.185,df=6, p =.163			

Table 7 presents the relationship between the frequency of library use and the awareness of digital services, using Chi-Square analysis and cross-tabulation. The data reveals some interesting patterns. Among those who use the library daily, a majority (61%) are moderately aware of digital services, while only 10.6% are highly aware. This is somewhat unexpected, as daily users would typically be assumed to have higher levels of awareness, yet the percentage of highly aware individuals is relatively low in this group.

In contrast, individuals who visit the library on a weekly basis appear to have the highest proportion (20.2%) of highly aware users, along with a significant 51.9% being moderately aware. This suggests that weekly users might be more engaged with or informed about the library's digital services than even the daily users. Those who visit the library monthly show the highest percentage (48.8%) of less aware users, indicating that limited library interaction may lead to reduced exposure to digital services. Similarly, users who rarely visit the library also exhibit lower levels of awareness, with 36.5% being less aware, though a relatively balanced percentage are moderately (45.9%) and highly aware (17.6%).

The Chi-Square test result (χ^2 = 17.622, df = 6, p = 0.023) indicates that the relationship between library usage frequency and awareness of digital services is statistically significant, as the p-value is less than 0.05. This confirms that how often individuals use the library is meaningfully associated with their level of awareness of its digital services.

DISCUSSION

The research adopted a quantitative approach using survey methodology to examine users' engagement with digital resources and digital services. The target population included BS, MS/MPhil scholars, and doctoral students at the Central Library, University of Peshawar. A total of 480 questionnaires were distributed by hand; 370 were returned, and after review, 15 were excluded due to incompleteness or unusable condition. The final sample of 355 valid responses represented a 92% response rate (355 from 385). The study focused on two main objectives: assessing awareness of various digital resources and services, and evaluating users' motivation and satisfaction with them. Data collection utilized a structured Likert-scale questionnaire, analyzed through SPSS software using frequency distributions, reliability tests (Cronbach's alpha > 0.7), and chi-square analyses to examine demographic relationships.

Findings were divided into four parts according to the research objectives. Awareness of digital resources showed considerable variation. Respondents demonstrated low awareness of electronic archives (54.9%), research datasets (50.7%), and ETDs (29.0%). Citation management tools had the lowest recognition, with only 3.9% highly aware. Research databases showed relatively higher awareness (22.5%). Awareness levels were significantly associated with qualification (χ^2 = 12.273, df = 4, p = .015), with PhD students showing greater familiarity. These findings are supported by Jan, Bahader, and Rehman (2021), who noted general database familiarity but limited awareness of specialized tools. In contrast, Khan & Ahmed (2016) reported higher e-database awareness in engineering universities, indicating the influence of training and disciplinary background.

Awareness of digital services also varied. OPAC recorded the highest awareness (40.3%), while virtual reference services (39.4%), digital literacy courses (43.9%), and CAS (17.7%) showed low visibility. Age was a significant factor (χ^2 = 35.784, df = 8, p < .001), with users aged 26–30 more aware than younger users. Awareness also correlated with frequency of use (χ^2 = 17.622, df = 6, p = .023), with weekly users most aware. These results align with findings by Taufiq, Rehman, and Ashiq (2020) and Jan et al. (2021), who emphasized the availability of basic services like OPAC, but limited promotion of advanced services.

Satisfaction with digital resources also varied. Research databases (26.5%) and e-journals (19.7%) received the highest satisfaction ratings, while dissatisfaction was highest for research datasets (45.4%), multimedia content (43.1%), and digital archives (47.3%). Satisfaction was significantly associated with qualification (χ^2 = 22.479, df = 4, p <.001), with PhD students reporting higher satisfaction. Users aged 26–30 were more satisfied (25.0%) than those under 25 (10.7%). These results are consistent with Bhuva & Makwana (2017) and Habiba & Ahmed (2020), who found satisfaction to be linked to accessibility and quality. However, Ahmad & Gul (2020) reported low satisfaction at

University of Peshawar due to infrastructure and awareness issues, emphasizing the role of institutional support and training.

Satisfaction with digital services reflected similar trends. OPAC had the highest satisfaction (40.6%), while virtual reference services (44.5%) and digital literacy training (39.7%) had the lowest. Satisfaction with services was associated with usage frequency (χ^2 = 16.402, df = 6, p = .012), and again, age was a significant factor (χ^2 = 39.162, df = 8, p < .001), with the 26–30 age group reporting the highest satisfaction (34.1%). These results align with Khan et al. (2014) and Taufiq et al. (2020), who observed user satisfaction with circulation and OPAC services. However, issues with training and automation were also reported by Amjad Khan et al. (2014), who cited lack of IT-trained staff at the Central Library. The findings emphasize the need for improved digital service quality, better promotion, and user training. While basic services are functional and appreciated, most advanced digital services remain underutilized, and satisfaction is hindered by limited awareness and lack of institutional support. Demographic differences further highlight the importance of targeted interventions.

CONCLUSION

In this study, the University of Peshawar's Central Library's digital resources and digital services have been thoroughly examined, and both strengths and significant needs for development have been discovered. Most digital resources and tools suffer from low awareness and poor user experience, whereas some services, like OPAC, are well-known and appreciated. The disparities in usage patterns by demographics highlight the significance of population-specific approaches to service enhancement. For awareness and promotion, the library can greatly improve its digital resources and digital services by using the recommended tactics, such as improved training programs, augmented awareness campaigns, service quality upgrades, and policy changes. The library's role in supporting academic success in the digital age will be strengthened by these improvements, which will also boost user happiness.

REFERENCES

A., & Jan, S. U. (2021). University libraries ranking in Khyber Pakhtunkhwa, Pakistan: A proposal. Library Philosophy and Practice, 2021, 1–19. [or Library Philosophy and Practice (e-journal), 1–19

Abutabenjeh, S., & Jaradat, R. (2018). Clarification of research design, research methods, and research methodology: A guide for public administration researchers and practitioners. Teaching Public Administration, 36(3), 237–258.

Ali, F., Munir, N., & Abubakar, M. (2025). Readiness for Adopting Artificial Intelligence and Emerging Technologies in Academic Libraries of Pakistan. The Critical Review of Social Sciences Studies, 3(1), 1146-1160

Alzahrani, A. I., Mahmud, I., Ramayah, T., Alfarraj, O., & Alalwan, N. (2019). Modelling digital library success using the DeLone and McLean information system success model. Journal of librarianship and information science, 51(2), 291-306

Ameen, K., & Rafiq, M. (2009). Development of digital libraries in Pakistan. Handbook of research on digital libraries: Design, Development, and Impact (pp. 482-491). IGI Global

Ameen, K., & Warraich, N. F. (2014). Trends in LIS education and research in Pakistan. In Library and Information Science Research in Asia-Oceania: Theory and Practice (pp. 187-199). IGI Global Scientific Publishing

Ameen, K. (2011). Changing scenario of librarianship in Pakistan: managing with the challenges and opportunities. Library Management, 32(3), 171-182

Anunobi, C. V., & Okoye, I. B. (2008). The role of academic libraries in universal access to print and electronic resources in developing countries. Library Philosophy and Practice (e-journal). Retrieved from

Bhatti, R., & Chohan, T. M. (2013). The Education System and Librarianship in Pakistan: An Overview. Library Philosophy & Practice

Bhoi, N. K. (2017). Use of information communication technology (ICT) and library operation: An overview. Research Journal of Library Sciences, 5(2), 1-7

Bhuva, D., & Makwana, M. B. (2017). A study on the user satisfaction level on digital library services of IIM Ahmedabad. International Journal of Advanced Research, 5(3), 1304-1310

Casteel, A., & Bridier, N. L. (2021). Describing populations and samples in doctoral student research. International journal of doctoral studies, 16(1)

Chowdhury, G. G. (2008). Librarianship: an introduction. Facet Publishing

Chun Tie, Y., Birks, M., & Francis, K. (2019). Grounded theory research: A design framework for novice researchers. SAGE Open Medicine, 7, 2050312118822927

Clandinin, D. J., & Rosiek, J. (2019). Mapping a landscape of narrative inquiry: Borderland spaces and tensions. In Journeys in narrative inquiry (pp. 228-264). Routledge

Dannels, S. A. (2018). Research design in the reviewer's guide to quantitative methods in the social sciences (pp. 402-416). Routledge

DeLone, W. H., & McLean, E. R. (1992). Information systems success: The quest for the dependent variable. Information systems research, 3(1), 60-95

DR, J. N. E. (2016). Users' perception of the facilities, resources, and services of the MTN Digital Library at the University of Nigeria, Nsukka

Etikan, I., Musa, S. A., & Alkassim, R. S. (2016). Comparison of convenience sampling and purposive sampling. American journal of theoretical and applied statistics, 5(1), 1-4

Fife-Schaw, C. (2020). Questionnaire design. Research methods in psychology, 343-374

Habiba, U., & Ahmed, S. Z. (2020). ICT infrastructure and access to online services: determining factors affecting faculty satisfaction with university-subscribed resources. International Information & Library Review, 53(2), 112-130

Haider, Syed Jalaluddin, "Books and their keepers". Dawn, (Education Magazine) available http://eprints.rclis.org/archive accessed zs" March 2008

Haseeb, A., & Jan, S. U. (2017). Peshawar University Campus Libraries, Treasury of Central Asian Manuscripts. Central Asia, 81(winter), 53-75

Hussain, F., & Ansari, M. N. (2018). Content analysis of library & information science (LIS) curricula in Pakistani Universities. Journal of History and Social Sciences, 9(1). Hussain,

Hussain, N. (2023). Evaluating Professionals' satisfaction and Dissatisfaction with Library and Information Science (Lis) Curricula in Pakistan: A Comparative Study. Frontline Social Sciences and History Journal, 3(07), 06-12

Ikart, E. M. (2019). Survey questionnaire survey pretesting method: An evaluation of the survey questionnaire via the expert reviews technique. Asian Journal of Social Science Studies, 4(2),

Ismail, M., & Idress, M. (2019). Information needs and seeking behaviour of social science faculty at the University of Peshawar. IJoLIS, 4

Ismail, M., & Idrees, M. (2018). Seminar Libraries of the University of Peshawar: Use and Resources. Putaj Humanities & Social Sciences, 25(1)

Jan, S. U., & Khan, P. (2018). Development of libraries and library science education in Peshawar-Khyber Pakhtunkhwa, Pakistan: a historical review. Central Asia (1729-9802), (82)

Jan, S. U., & Khan, P. (2018). Development of Libraries and Library Science Education in Peshawar, Khyber Pakhtunkhwa, Pakistan: A Historical Review. Central Asia, 82(06), 161-171.

Khan, A., Bhatti, R., Khan, G., & Ismail, M. (2014). The role of academic libraries in facilitating undergraduate and post-graduate studies: A case study of the University of Peshawar, Pakistan. Chinese Librarianship: an International Electronic Journal, 38, 36-49

Khan, A., & Ahmed, S. (2016). The impact of digital library resources' usage on research productivity: A study among engineering students in Pakistan. Pakistan Journal of Information Management & Libraries, (17), 174-183

Khan, A., Jan, R., & Shah, S. H. (2024). Exploring the emerging trends in library and information science research in Pakistan: an evolutionary analysis

Khan, A. (2004). Appraisal of users' approach to library services and facilities: a case study of the Central Library, University of Peshawar.

Khan, G., & Bhatti, R. (2015). Determinants of academic law libraries' use, collections, and services among the faculty members: a case study of the University of Peshawar. Collection Building, 34(4), 119-127

Khan, S. A., & Bhatti, R. (2014). Professional Issues and Challenges Confronted by the Pakistan Library Association in the Development of Librarianship in Pakistan. Chinese Librarianship, (37)

Khurshid, A. (1992). Library education in Pakistan: Concerns, issues and practices. Library education in Pakistan: Past, present and future, 11-28

Krosnick, J. A. (2017). Questionnaire design. In The Palgrave handbook of survey research (pp. 439-455). Cham: Springer International Publishing

Kumar, S. (2018). Understanding Different Issues of Unit of Analysis in Business Research. Journal of General Management Research, 5(2)

Lee, H.W. (2003). Departmental libraries: Guidelines and requirements. Retrieved September 23, 2013, from: http://www.ohio.edu/policy/s14-101

Levitt, H. M. (2018). How to conduct a qualitative meta-analysis: Tailoring methods to enhance methodological integrity. Psychotherapy Research, 28(3), 367-378

Mahmood, K. (2003). A comparison between the needed competencies of academic librarians and LIS curricula in Pakistan. The electronic library, 21(2), 99-109

Mezmir, E. A. (2020). Qualitative data analysis: An overview of data reduction, data display, and interpretation. Research on humanities and social sciences, 10(21), 15-27

Ministry of Education (2009) National Education Policy, Islamabad: Government of Pakistan, retrieved from:

Mittal, A., & Sharma, B. K. (2013). Familiarity and Use of Digital Resources by the Library Users in Agriculture Universities of Himachal Pradesh: A Study. International Journal of Library Science and Research (IJLSR), 3(3), 31-40

Nanjundeswaraswamy, T. S., & Divakar, S. (2021). Determination of sample size and sampling methods in applied research. Proceedings on Engineering Sciences, 3(1), 25–32

Platino, E. C. (2023, December 2). Assessment and utilization of digital library services in the new normal: Implications for students' academic application. In Proceedings of the International Conference on Future of Education, 6(1), 99-110

Purdy, E. R., & Popan, E. M. (2018). Descriptive research. Online. Salem Press Encyclopedia. Accessed November 27, 2019

Rapport, F., & Hughes, S. E. (2020). Frameworks for change in hearing research: Valuing qualitative methods in the real world. Ear and Hearing, 41, 91S-98S

Raudeliūnienė, J. (2018). Basic research methods. Modernizing the Academic Teaching and Research Environment: Methodologies and Cases in Business Research, 47-70

Retrievedfromhttps://www.researchgate.net/publication/28807889_Challenges_and_Opportunities_for_Libraries_in_Pakistan

Scoulas, J. M. (2021). College students' perceptions of sense of belonging and inclusion at the academic library during COVID-19. The Journal of Academic Librarianship, 47(6), 102460

Siregar, N. Z., & Syam, A. M. (2024). The influence of digital library service quality on student satisfaction. PERSPEKTIF: Journal of Social and Library Science, 2(2), 40–48

Syam, A. M. (2022). The effect of library facilities on library satisfaction at the State Islamic University of North Sumatra Library. International Journal of Cultural and Social Science, 3(1), 70-77

Tom-George, N., & Onyema, N. (2020). Digital library services for sustainable university education. International Journal of Innovative Education Research, 8(3), 128-135

Ullah, A. (2015). Examining collaboration among the central library and seminar libraries of leading universities in Pakistan. Library Review, 64(4/5), 321-334