P-ISSN: 2709-6254	Journal of Development and Social Sciences	Jul-Sep 2024, Vol. 5, No. 3
O-ISSN:2709-6262	https://doi.org/10.47205/jdss.2024(5-III)09	[87-99]

Journal of Development and Social Sciences
www.jdss.org.pk

RESEARCH PAPER

Current Technological Trends Used in Libraries: A Study of Public Sector Universities of Khyber Pakhtunkhwa, Pakistan

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ABSTRACT

The current research focuses on the analysis of the recent technological trends being used in the selected public sector university libraries. A total of ten public sector university libraries have been selected for this study based on their adoption of advanced technologies in these libraries. Questionnaires are the main source of data collection techniques. The collected data has been analyzed through Statistical Package for Social Science (SPSS), 20th edition. The research findings indicate that libraries have embraced modern trends, at different levels. Furthermore, some libraries suffer from a shortage of professional and technically proficient staff, to enhance and provide improved library services and resources to their patrons, it is imperative to prioritize recommended actions.

KEYWORDS Adoption of Technologies, Advanced Technological Trends, KPK, Public Universities, University Libraries

Introduction

The advancements and development of technologies in the field of libraries and information sciences have a significant effect on all types of libraries and information centers globally. The prompt growth of technologies has altered the conventional library's operations into automated and enhanced its efficiencies. Therefore, those libraries which have assumed advanced library practices by using the latest and modern technologies are regarded as modern or advanced libraries. But, the same practice of adopting new technologies by libraries in under-developed countries is slow because of so many obstacles like funds, ICT infrastructure, less interest of the professionals, lack of training and IT education, etc. As, Haider in 1998 has stated that, the adoption of apt technologies or even computer use in Pakistani libraries was rare. Technology, primarily adopted and used in Pakistani informational work or libraries was in 1968. The PASTIC institute has established profiles of 100 national scientists to begin selective dissemination of information (SDI) services. Similarly, the Sindh Agricultural University introduced modern computers in the library ten years later, in 1980.

Mehmood (1999) stated that in Pakistan a large number of libraries were automated during or after 1987. In the 1990s, the government of Dutch launched a project entitled as "the Netherlands Library Development Project for Pakistan (NLTDP-P). Under this project, many initiatives were taken just as, the training of library professionals, facilitating libraries by providing hardware and library departments in the country, the development of library automation programs, establishing computer centers, making CD-ROM databases, and introduction information communication technology into the library science syllabus and courses. Apart from these the first library software, known as "Library Automation and Management Program" (LAMP), was introduced and used in several libraries in Pakistan, and Pakistan Library Automation Group (Pak LAG) in the year 2000 was developed. This group also created the Library Information and Management System (LIMS) software as Open Source and made it freely available on its website which enabled the automation of a

significant number of libraries. Similarly, the club had established plag@yahoogroups.com as an electronic mailing list.

Similarly, Jabeen & Khan stated that in 2012 the adoption of technologies in Pakistani libraries was in the initial stages. However, they suggested that sincere and continuous struggle are required to get to the highest point to achieve maximum returns from the advanced technologies in Pakistani libraries (Jabeen & Khan, 2012). Despite the efforts made in the past, still, some of the public sector university libraries are performing their activities in an old manner, without using computers and other technologies for the digitization of library contents and services. Similarly, many libraries are lacking their websites despite the positive attitude of library practitioners towards advanced technologies. The main reasons for the adoption of advanced technologies could be the unavailability of ICT infrastructure and the low budget (Sheikh & Jan 2013).

In 2017, Margam and Dar expressed that, apart from the contributions by the (Pak LAG) group the Higher Education Commission's research-associated activities, have given motivation to the start of M. Phil and Ph. D research in the Library and Information Science education in a few universities and the provision of internet service through PERN-! And PERN-II has paved the way for the adoption of advanced technologies in libraries. That ultimately, has improved the use of technologies in the libraries of public sector universities of the country. Analyzing the situation regarding the adoption of technological trends in libraries of higher education acquainted one with the current state and aids professionals in making informed decisions about advanced technology uses. Hanif, S., Shah, S. A. A., Rehman, A. U., & Hassan, S. (2024) mentioned that libraries have changed a lot to deal with the new challenges and chances brought by technology. Therefore, this study is an endeavor to examine the adoption of recent technological trends used in the selected university libraries in Khyber Pakhtunkhwa, Pakistan, and to limit the barriers to the use of innovative technologies.

Moreover, the public sector university libraries in Khyber Pakhtunkhwa, Pakistan, have been undergoing transformative changes in recent years particular since Covid-19 and also due to the maximum use of social media tools by the public in general and students in particular. In addition, the evolving educational paradigms and shifting user expectations have led to emerging trends that are reshaping the role and functions of these libraries. This introduction sets the stage for exploring the key emerging trends in the public sector university libraries of Khyber Pakhtunkhwa, highlighting their significance and implications for academic institutions in the region.

Literature Review

Modern technologies have drastically changed traditional library services. There are countless research articles on this issue because of its utmost importance in today's world. This part aims to provide an overview of the research relevant to this topic.

As explained in the introduction the technological use in libraries in Pakistan started in the early 80s and went on till the 1990s at a slow pace as mentioned by Ali (2005). Similarly, Ali (1990); Riaz (1993); Attaullah (1993); Hussain (1994); Harloe & Budd (1994); and Mahmood (1998) have described various efforts made for the adoption of technologies in libraries in Pakistan.

In 2004, Raziuddin studied digital libraries in Pakistan. He explained the historical background of digital libraries along with digital resources, digital library management, and issues in digital library development. Noor Shed Khan (2005) agreed that libraries are still imparting old-style/conventional library services whereas, library patrons are interested in modern services. Therefore, reserving adequate financing for training, equipment, and user cognizance are the most important aspects of concern. In the same year, Ali (2005) in his

book "Digital Libraries in the Making," emphasized the assistance of several national and international agencies to library digitization and automation. He also expressed details about information networks and digital information. A year later Jaswal (2006) studied the digital technology in libraries and the limitations for the users of the academic libraries. She suggested professionals cope with the arising issues using their ability and competence in the way of adopting technologies.

In another research, Shah, et al. in 2005 investigated digital library services in libraries. They found that the advent of current library trends in digital library services has impacted positively all aspects of libraries both in developed and developing countries. These modern trends and technologies have advanced the service delivery in university libraries in Pakistan. In another study, Haider (2007) stated that for libraries we have no preplanned program for library automation at the national level. Therefore, we are faced with many problems for example, the choice of proper technology including software, fewer finances, no proper standards, no proper approval from library professionals, and a scarcity of trained and skilled staff. To overcome these issues, the author strongly suggests developing an information policy as well as motivating library professionals and higher authorities to adopt and use recent technologies in library operations.

Many challenges in the way of application new technologies in libraries were discovered by Shafique and Ahmad in 2007. They found that to implement new technological trends in libraries and develop good collection high budgets are required to libraries. Furthermore, in order to get the desired objective, we need to up to date library education; train human resources; and to assess and evaluate the role of library associations. In addition, they suggested to get the targeted goal the library planning and cooperation of staff is also required. Roberts and Janoyy (2009) mentioned that Eastern countries are slow to adopt new and modern library practices. But, a country like Pakistan must realize the importance of modern library tools and techniques. It is also very encouraging that the officials in the public sector are enthusiastic to computerize libraries through Programs e.g. Program for Enhancement of Research Information (PERI) and the International Network for the Availability of Scientific Publications (INASP). However, the problems identified that are blocking the adoption of new trends and technologies are; insufficient funding; less bureaucratic interest in developing libraries, and deliberate speed of library computerization initiatives in the country.

In another study, Shafique and Mahmood (2008), advised library professionals to thoroughly check the process of automation in different libraries to update themselves regarding the contemporary library software, its installation, implementation, and repairs of the technological systems used in libraries. Furthermore, they emphasized the library Schools imparting education in the field of LIS, Professional Associations in the country, and different groups making efforts for the automation of libraries to organize hands-on practices on various Open Source library software and its technical issues for easy understanding and explanations. The PakLAG Group, founded in 2000, is a non-profit trust for encouraging novice librarians to acknowledge themselves about the updated and latest trends used in the field of libraries. However, it is very good that these professionals include young and senior library experts, working hard to promote and implement technologies in libraries. PAKLAG has developed offices in all provinces over the decade (2000-2010). This group facilitates the automation of information centers and libraries. They also provide hands-on practice to professionals to update them on the latest library technology. This trust has made recommendations to the government and legislative authorities about library modernization (Khan and Mehmood, 2010). In the same way, Ameen (2008) discovered that the adaptation of the latest library trends in the country is not so fast. Researchers Ramzan and Singh (2009) have revealed that libraries should be provided with more computer systems and the provision of e-mail and internet services should be provided. The study looks at the bad IT infrastructure and slow internet speeds. The role of the HEC Digital Library, on the other hand, has been recognized by scholars. Ansari and

Zuberi (2010) believe that in today's world electronic information resources are adequate sources of up-to-date information. However, they found that poor links and scarcity of skilled and expert library staff are the root causes in the way of proper utilization of library resources. Bhatti (2010) discovered the problems in the provision of online information resources to academicians by the libraries in Pakistan. She determined two problems, one is the smaller number of PCs available for the academicians in libraries, and another problem was the slow speed of the internet and suggested that these issues should soon be addressed to support academicians in the universities.

Jan (2011) recommended that to control the flood of information and to meet the informational needs of the respondents' libraries and library professionals need to properly organize and preserve the information in databases and for the said purposes the libraries should need to use electronic means for correctness and efficiency in the provision of information to library readers. He determined hurdles faced by the professionals in the process of digitization, these are the ever-changing technology, legalities in reproducing, and preservation procedures for future use. To combat the challenges of digitization serious efforts are needed by the librarians, the publishers, and the libraries' managerial bodies. Similarly, Poor computer literacy, technological infrastructure, and internet access, according to Arif and Mehmood (2012), are the key challenges to the introduction of web 2.0 knowledge in libraries. Regular training in web 2.0 technologies, according to the study, will improve librarians' professional capacities to adopt new trends in libraries.

Researchers revealed that the unstable budgetary condition of the Khyber Pakhtunkhwa government was insufficient for the provision of any prospect for the capacity building of the information professionals. In addition, the power shortage was determined as one of the main issues with the proper application of the latest technologies in libraries. The implementation and use of Web 2.0 technologies need training and cooperation from authorities but in Khyber Pakhtunkhwa, there is a lack of these activities. The data also showed that most library staff mostly used the following Web 2.0 tools such as; Facebook, YouTube, Skype, and Twitter. The seldom-used social media tools include are; Simple Syndicate (RSS) feeds Bookmarking, flickers Podcasting Video casting, Blogging, Folksonomies, and social tagging (Rahman and Idrees, khan, 2016).

Khan and Ahmed (2020) stated that the use of new and latest technologies in information centers and libraries especially is a great challenge in developing countries because of low financial resources. Even then, computer scientists are developing human-computer interfaces managed by library professionals and information service providers for their patrons to get advantage.

The critical review of the above literature demonstrates that the adoption and use of new trends in the field of librarianship reflect library users' satisfaction. The existing needs and requirements of the library users undoubtedly require the latest technologies for promoting library effective services which are much faster and more accessible. Furthermore, the rapid evolution of technologies necessitates enhancing library professionals' skills for improved delivery of information services to patrons. As the improved quality of library services depends upon new technology and professional abilities, therefore, to gauge the effectiveness of library services, researchers must evaluate the new trends and technologies adopted in libraries and the barriers they face in their adoption and use. The current research has been driven by the same motives.

Material and Methods

To achieve the decided objectives of the study, a survey research method utilizing a self-designed questionnaire has been employed. The entire population under scrutiny comprises the ten librarians of the selected libraries within the total 34 public sector universities of Khyber Pakhtunkhwa. These libraries were selected after the personal visits

made to these libraries by the researchers who found that these are using technologies in the provision of resources and services.

The researchers examined and calculated the requirements of the study in terms of man, material, time, and tentative costs. The research design was found to be suitable.

Results and Discussion

Demographics of the Respondents

As per the information available on the Higher Education Commission (HEC) website, there are currently 34 public-sector university libraries in Khyber Pakhtunkhwa. Among these, 10 university libraries are chosen for research purposes. Questionnaires were circulated among the librarians working in these selected universities both through email and in person. All of the selected librarians responded to the questionnaire, achieving a 100% response rate.

Similarly, data in Table 1 revealed that the majority of the libraries are managed by male librarians 80% administrators whereas, only two libraries are run by females i.e. 20%. In the same table, the qualification of the respondents was also displayed. It showed that only one librarian holds a Ph. D. degree, 40% possess an MS-LIS degree, and 50% are having M-LIS degree in Library and Information Science. In addition, when asked about ICT training and certification, it was found that 80% of librarians have received ICT training, while the remaining two do not possess such qualifications.

Table 1
Demographic Information

Demographics	Category	Frequency	Percentage
Population	Librarian	10	100%
Gender	Male	08	80%
	Female	02	20%
Qualification	M-LIS	05	50%
	MS-LIS	04	40%
	Ph. D	01	10%
ICT Training	ICT Training received	08	80%
	ICT Training not received	02	20%

Libraries Learning Resources

The university libraries learning resources comprise a variety of information sources utilized by individuals to gain knowledge about their specific areas of interest. These educational materials contain printed materials such as books, newspapers, journals, magazines, e-journals, and bibliographic databases, as well as digital non-book materials. In university libraries, these resources perform a pivotal role in supporting learning, teaching, and research endeavors.

The respondents are asked to show the availability of educational resources across various libraries, the data received is displayed in Table 2 below. Among the university libraries, the library of the University of Peshawar (UOP) takes pride in possessing the largest book collection, boasting 167,501 volumes. It is closely followed by the University of Engineering and Technology, Peshawar, and the University of Agriculture, both of which housed 120,560 books. The Islamia College Peshawar holds a significant collection of 92,100 books, whereas, the Shaheed Benazir Bhutto Women University Peshawar possesses the most modest collection.

So for the newspaper titles concerned, the University of Peshawar maintains the most extensive collection, while Shaheed Benazir Bhutto Women University Peshawar has the smallest assortment. When it comes to serial magazines, The University of Agriculture, Peshawar, leads the way with 210 magazines, followed by the University of Peshawar (UOP) with 124 titles and Islamia College Peshawar with a collection of 110 magazines. Similarly, research journals play an important role in supporting university-level research scholars. The University of Peshawar has subscribed to a greater number of research journals in comparison to other public sector university libraries in Khyber Pakhtunkhwa. Apart from these, the survey inquired about the number of thesis and dissertations within their library holdings. Among the libraries, the University of Peshawar (UOP) emerges as the leader in this category, with an impressive collection of 7000 theses and dissertations. The Gomal University D.I. Khan follows with 6000 theses and dissertations. Whereas, the University of Engineering and Technology and Agriculture University libraries have 5000 theses and dissertations in each university. The smallest collection of the above-mentioned materials was in the Women University Library Mardan and Shaheed Benazir Bhutto Sheringal.

Table 2
Libraries learning resources

Library	Books Material	News Papers	Serial Magazines	Research Journals	Conference Proceedings	Thesis, Dissertations, Reports
University of Peshawar	167,501	27	124	21,000	85,000	7000
Islamia College Peshawar	92,100	08	110	20	15	2009
University of Engineering & Technology, Peshawar	120,560	12	50	60	20	5000
The University of Agriculture, Peshawar	120,000	04	210	79	2100	5000
Abdul Wali Khan University, Mardan	51,194	06	09	15	No	3700
Gomal University D.I Khan	80,000	05	09	40	10	6000
Kohat University of Science and Technology(KUST)	66000	08	08	60	10	4000
Shaheed Benazir Bhutto Women University, Sheringal(SBBWUS)	28000	06	07	21	07	1800
Shaheed Benazir Bhutto Women University, Peshawar	20,000	04	07	08	05	2,000
Women University Mardan	34,286	05	06	05	10	500

Hardware Facilities

The data about the Hardware facilities were determined and displayed in Table 3. It expressed that the majority of libraries had computer terminals and printing/scanning capabilities for the libraries' patrons. Most significantly, 8 libraries are having primary servers, while 9 libraries have the added benefit of backup power supply via UPS/generator systems. The details also showed that a solitary library was identified to house a microfilm reader, while two libraries featured smoke detectors. Moreover, three of the libraries surveyed had implemented an RFID security system. Among the surveyed libraries, it was revealed that three libraries were equipped with Barcode Readers, six libraries boasted Liquid Crystal Display (LCD) Projectors or CD Writers, five of the selected university libraries were furnished with digital cameras, and four libraries were outfitted with Teleconferencing facilities.

Table 3
Hardware facilities in the selected libraries

Sr.	Hardware	Total Libraries	Available	Not Available
1.	Main Server	10	08	02
2.	Computer Terminals	10	09	01

3.	Printers/Scanners	10	10	0
4.	Barcode Readers	10	03	07
5.	LCD Projectors/CD Writers	10	06	04
6.	Microfilm Reader	10	01	09
7.	Digital Camera	10	05	05
8.	UPS/Generator	10	09	01
9.	RFID Security System	10	03	07
10.	Fire/Emergency Alarm	10	06	04
11.	Smoke Detector	10	02	08
12.	Teleconferencing	10	04	06

Library Services

The following are the conventional and technology-based library services provided in these libraries.

The Conventional Services

In Table 4, the essential library services, which form the basic offerings aiding users in acquiring necessary information, were examined through a survey of the responding librarians. The analysis revealed that all public sector university Libraries offer Book Circulation Services. Only 3 libraries, offer Inter-Library Loan Service, while four libraries provide Reprographic services, and eight libraries offer User Education. It means all of these are providing some of the conventional services to the libraries' clientele.

Table 4
The conventional services offered in these libraries

University	Book Circulation	Inter Library Loan	Reprographic Services	User Education
University of Peshawar	Yes	Yes	Yes	Yes
Islamia College Peshawar	Yes	No	Yes	Yes
University of Engineering & Technology, Peshawar	Yes	Yes	Yes	Yes
The University of Agriculture, Peshawar	Yes	No	No	Yes
Abdul Wali Khan University, Mardan	Yes	No	No	Yes
Gomal University D.I Khan	Yes	No	No	No
Kohat University of Science and Technology	Yes	No	No	Yes
Shaheed Benazir Bhutto Women's University, Sheringal	Yes	No	No	No
Shaheed Benazir Bhutto Women's University, Peshawar	Yes	Yes	No	Yes
Women University Mardan	Yes	No	Yes	Yes

This section presents responses regarding the availability of services in their respective libraries. Table number 5 disclosed that each of the chosen libraries offers Reference Services, with eight of them additionally delivering Current Awareness Services (CAS). In addition, seven libraries are actively engaged in posing Selective Dissemination of Information services. So far the Indexing/Abstracting Services are concerned, only three universities extend this support to users. Whereas, Bulletin Board Service can be accessed in seven of the selected public sector university libraries in KPK.

Table 5
Information Services

University Name	Reference Service	Current Awareness Service (CAS)	Selective Dissemination of Information	Indexing/ Abstracting Service	Bulletin Board Service
University of Peshawar	Yes	Yes	Yes	No	Yes
Islamia College Peshawar	Yes	Yes	Yes	Yes	Yes
University of Engineering & Technology, Peshawar	Yes	Yes	Yes	Yes	Yes
The University of Agriculture, Peshawar	Yes	Yes	Yes	No	Yes
Abdul Wali Khan University, Mardan	Yes	No	No	No	Yes
Gomal University D.I Khan	Yes	No	No	No	No
Kohat University of Science and Technology	Yes	Yes	Yes	No	No
Shaheed Benazir Bhutto Women University, Sheringal	Yes	Yes	No	No	No
Shaheed Benazir Bhutto Women University, Peshawar	Yes	Yes	Yes	No	Yes
Women University Mardan	Yes	Yes	Yes	Yes	Yes

Technology-Based Information Services and Resources

An in-depth examination of information centered on technology is presented below.

Internet Services in Libraries

The advancements in libraries are closely linked to the provision of Internet services. Library professionals were queried about the internet services available in their respective libraries. The data presented in Table 6 indicates that among the ten university libraries chosen for this study, seven libraries had internet speeds measured in MBPs, one library in KBPs, and two libraries in GBPs. Furthermore, five of the selected libraries have established their websites, while the rest of the libraries do not have dedicated websites for their libraries.

Table 6
Internet Services

Bandwidth	KBPs	MBPs	GBPs
	01	07	02
Library Website	Yes	No	Total
	05	05	10

Accessibility to Useful Websites

Below is the data in Table 7 regarding the websites that can be accessed by the selected public sector university libraries in Khyber Pakhtunkhwa. Seven libraries reported access to the Online Public Access Catalogue (OPAC). In addition, it was observed that all the surveyed libraries under consideration provide access to the HEC Digital Library. A considerable proportion of respondents, constituting 90%, reported having access to Open Source Library, while 60% showed they could access the Digital Library of the Commons. In contrast, 20% expressed access to CORE, and about 60% confirmed their access to the Open Journal System, offering access to various journals and research articles.

Table 7
Accessibility to useful websites

Useful Websites/Links	Accessible	Not Accessible	Response Ratio
OPAC	07	03	07(70%)
HEC Digital Library	10	0	10(100%)
Open Source Library	09	01	09(90%)
Digital Library of the Commons	06	04	06(60%)
Core	02	08	02(20%)
Open Journal System	06	04	06(60%)

Accessibility to E-Learning Resources

The Pakistan Higher Education Commission (HEC) commenced a program of providing access to 30 online databases and more than 45,000 e-books to all universities and nonprofit research institutions in 2004. The purpose of this program was to cater to the varied requirements of academics and researchers within the nation. In 2012, HEC in its report claimed that currently, it is providing around 75,000 electronic resources online, setting a remarkable precedent for nationwide access to e-resources in developing nations (as cited by Khan in 2020). Data in Table 8 showed that E-learning resources (E-books) are accessible through an Open Database by two (02) libraries, while HEC Digital Library provides access to E-books for four (04) libraries. Most interestingly, some four libraries have the privilege of accessing E-books through both of these channels. Whereas, E-journals, are accessed by one library through an open database, while six libraries access them through the HEC Digital Library. Moreover, three libraries access E-magazines through an open database, while four libraries utilize the HEC Digital Library for this purpose. Most interestingly, two libraries have access to E-magazines through both sources.

Table 8
Accessibility of E-Learning Resources

E-Resources	Open Database	HEC Digital Library	Both (Open & HEC)
E-books	02	04	04
E-journals	01	06	03
E-magazines	03	04	02
E-thesis/ Dissertation/ Reports	02	04	04
CD ROM Database	01	04	0

Methods Used for Cataloguing and Classification

The organizing and categorizing through online methods are assessed and presented in Table 9. All the selected libraries were using Web Dewey (E-DDC) for the Cataloging and Classification of library materials. Similarly, the Library of Congress Classification System is employed by 4 libraries. In addition, 5 (50%) of the libraries were using the Library of Congress Subject Headings Lists (LCSH). About 6 (60%) of the libraries used the Online Public Access Catalogue (OPAC). Whereas, 3 (30%) libraries, in Khyber Pakhtunkhwa, utilized Resource Description Access (RDA) and Cataloguer's Desktop for organizing the information resources in libraries.

Table 9
Online Methods for Cataloguing and Classification

S. No	Online methods for Organization of Library resources	Libraries using Online method	Libraries not using Online method
1	Web Dewey (E.DDC)	10(100%)	0
2	Library of Congress Classification System (LC)	04(40%)	06
3	Library of Congress Classification Subject Headings (LCSH)	05(50%)	05
4	Online Public Access Catalogue (OPAC)	06(60%)	04
5	Resource Description Access (RDA)	03(30%)	07

6	Cataloguer's Desktop	03(30%)	07

Technical Services

Library professionals illustrate that 60% of respondents employ a computerized approach for Acquisition, Annual Stock Verification, and Circulation processes in their respective libraries. But, some of them still rely on traditional methods for these technical services. However, when it comes to budget control, 80% of respondents opt for conventional methods, while 20% prefer computerized methods. It is noteworthy, that for serial control, 90% of university libraries are using conventional methods, and just one library is utilizing computerized methods.

Table 10
Technical Services in Libraries

Library Technical Services	Conventional Method	Computerized (ILMS) Method
Acquisition	04	06
Budget Control	08	02
Annual Stock Verification	04	06
Serial Control	09	01
Circulation	04	06

The Open Source Database

The question regarding the choice of Open Source Software is reported in Table 11. It shows that Koha emerges as the preferred option, with 60% of respondents indicating its usage. In the second place, the most popular digital software is LIMS, adopted by 40% of the libraries. However, 2 libraries reported using alternative software, indicating that 02 libraries do not utilize either of the mentioned options.

Table 11
Open Source Database Used in Libraries

S. No	Library Software	Yes
1	LIMS	02(20%)
2	Koha	06(60%)
3	SLiMs	0
4	Evergreen	0
5	Insignia	0
6	E-prints	0
7	Libmax	0
8	D-Space	0
9	Greenstone	0
10	Other	02(20%)

Operating System

Table 12 shows data regarding the operating systems employed in the libraries of selected Public Sector University libraries in Khyber Pakhtunkhwa. This data tabulated sheds light on the emerging trends in operating system usage among these libraries.

1. MS Windows: The majority 60%, of libraries opt for the MS Windows operating system. Windows 10 is the most commonly utilized version.
2. Linux: Linux is the choice of 30% of the libraries.
3. Ubuntu: Ubuntu serves as the operating system in 10% of the libraries.

Surprisingly, none of the selected libraries utilize UNIX, Android, and IOs as their operating system.

Table 12
Operating System Used in Libraries

University Name	MS Windows	Linux	Unix	Android	IOs	Ubuntu
University of Peshawar	Yes					
Islamia College Peshawar	Yes					
The University of Engineering & Technology, Peshawar		Yes				
The University of Agriculture, Peshawar	Yes					
Abdul Wali Khan University, Mardan	Yes					
Gomal University D.I Khan		Yes				
Kohat University of Science and Technology	Yes					
Shaheed Benazir Bhutto Women's University, Sheringal		Yes				Yes
Shaheed Benazir Bhutto Women's University, Peshawar						
Women University Mardan	Yes					
	60%	30%	0%	0%	0%	10%

Conclusion

The study concluded that now the libraries have embraced modern trends and many new technologies have also taken place, at the same time some libraries also have a shortage of professional and technically proficient staff. There is a need to hire more professional staff to enhance and provide improved library services and resources to their users so that the latest technologies can be more easily adopted by such professional staff.

Recommendations

- In light of findings, it is recommended that public sector university libraries allocate more budgets for the acquisition of hardware like cameras, RFID systems, barcode readers, microfilm readers, equipment for teleconferencing, etc. essential for the provision of effective services.
- In the current era university libraries are still providing some of its services like circulation, interlibrary loan, reprographic, and user education conventionally but, it should be done online for efficiency and correctness. Whereas, most of the libraries are providing reference services, SDI services, and CAS services online a small ratio is providing indexing/abstracting and bulletin board services online which should be done online.
- As 50% of libraries have their Website and 50% don't have their websites. Therefore, it is strongly recommended that all libraries have their website and have an uninterrupted internet connection for maintaining online services to users.
- All libraries must get access to E-books, E-Journals, E-magazines, E-theses & dissertations, and CD ROM databases.
- The library staff must be trained to utilize online organizational methods like LC, LECH, OPAC, RDA, and Cataloguer's desktop for better performance.
- Library professionals must be familiar with the Open Source Software to take full benefits from these freely available Software.
- The Library Associations and the Library schools should organize programs and invite the concerned higher-ups to convince and develop their interests in the provision of these technologies to the university libraries.

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