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## Assessment of ICT Facilities in the Public Libraries of Khyber Pakhtunkhwa: A Descriptive Study

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## **Assessment of ICT Facilities in the Public Libraries of Khyber Pakhtunkhwa: A Descriptive Study**

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### **Abstract**

**Purpose:** This study aimed to review the ICT facilities in the public libraries of Khyber Pakhtunkhwa. The specific objectives were to see the status of ICT resources, check the ICT tools used in delivering services, and point out problems faced by the public libraries in developing ICT infrastructure.

**Research Design and Methodology:** The study's population consisted of public libraries in the province of Khyber Pakhtunkhwa. The census-based approach was employed, and data was gathered from library heads via questionnaire. The collected data was analyzed using the Statistical Package for Social Sciences version 22.

**Findings:** It was found that most of the libraries did not have electronic information resources like e-books, theses and dissertations and access to the HEC database. Most libraries lacked ICT equipment, including microfilming machines, barcode readers, external hard drives, digital cameras, television and multimedia projectors. The majority of libraries did not use ICT applications like Twitter, YouTube, LinkedIn, Flickr and RSS for library services. The key problems identified by libraries while developing ICT infrastructure were inadequate e-resources, limited staff, lack of financial resources, insufficient IT staff and non-availability of standard library software.

**Implications:** The study's findings are beneficial to the government and higher library authorities. The critical point to be considered includes 1) LIS professionals and IT staff be recruited and trained in modern learning, education and communication skills, 2) sufficient funds should be provided to libraries to develop ICT infrastructure 3) digital resources should be acquired, and 4) the librarians should have the power and freedom to spend the budget based on the users' needs.

**Originality:** The study is unique because this is the first study in the country to assess the ICT facilities of public libraries. It will fill the literature gap and guide the researchers to do similar studies across the country.

**Keywords:** ICT Infrastructure, ICT tools and applications, ICT Facilities, Public Libraries, Khyber Pakhtunkhwa, Pakistan

## **Introduction**

The evolution of computer technology can be described in terms of 'yesterday,' 'today' and 'tomorrow.' This is useful to remind us of where we were and where we are today, and to alert us of the importance of taking a future perspective. ICT has been widely used in recent years to replace previous terms like "technology learning" and "informational technology" (Finger et al., 2007). The acronym ICT has been explained and interpreted in various definitions according to Tayade and Bhadange (2007) ICT are the generic term for technologies used to collect, store, edit and transmit information in various forms. Ebijuwa (2005) define ICT as “tools and as well as means used for collection, capture, process, storage, transmission and dissemination of information.

Information and Communication Technologies changed the agrarian and industrial societies into information and knowledge societies. ICT is the combination of computers and information technology which are used in librarianship for acquiring, organizing, storing, retrieving and disseminating of information (Thanuskodi, 2011). As expressed by Choukhande (2013) before the emergence of ICT, libraries were only book centered institutions and these were stored to satisfy the need of the users. The library operations and other routine works, such as cataloging, classification, circulation, registration, acquisition, and stock taking were done manually. But there is a paradigm shift with the emergence and development of ICT and has brought many changes in the field of librarianship.

The benefits of ICT applications in libraries cannot be overemphasized; one of the main benefits is that it enhances creativity and innovation, facilitates access to information, provides access to a wide range of information at a time, makes it cost-effective, satisfies users, improves and accelerates the retrieval of information, facilitates the search for information, etc. (Dabas, 2008). According to The International Federation of Library Associations and Institutions (IFLA), the public libraries should be equipped with ICT facilities including “workstations, printers,

CD/DVD drives, printers, copiers, scanners, webcams, microfilm/fiche readers” (Koontz & Gubbin, 2010).

Libraries in general and public libraries in particular play a crucial role in the development of all aspects of a society because it covers a broad spectrum of users (Saleh & Lasisi, 2011). The public library is a democratic equalizer, open to all and providing access to information that helps people to improve their individual, family and community lives (Scott, 2011). The public library is a library that provides free services or charges the standard fee for its services. The public library is the local gateway to knowledge and provides a primary condition for lifelong learning, independent decision-making and cultural development of the individual and social groups (IFLA & UNESCO, 1994). International Federation of Library Associations and Institutions (IFLA) defined public library as

A public library is an organization established, supported and funded by the community, either through local, regional or national government or through some other form of community organization. It provides access to knowledge, information, lifelong learning and works of the imagination through a range of resources and services and is equally available to all members of the community regardless of race, nationality, age, gender, religion, language, disability, economic and employment status and educational attainment. (Koontz & Gubbin, 2010, p.1)

Public library users include children, teenagers, young seniors, adults, persons with special needs such as those with hearing and visual disability, inmates, older people, nursing mothers, groups and government individuals (Gill, 2001). Koontz and Gubbin (2010) said that the public library's main aim is to provide tools and programs that meet individuals' and groups' needs for their education, information and recreation. Bhat (2007) claimed that many analysts predicted the death of books and libraries with the advent of information technology, but the library remains and will continue to be of great benefit in the future. The public library will serve as an aggregator of community information. Wooden (2006) described that though how vast and growing amount of information is available through the internet; However, public libraries' role in communities will continue to be vital. Most people say that if public libraries stop operating or close, they will feel that something crucial and essential is lost, affecting the community.

## Literature Review

Das and Barman (2020) examined the adoption of ICT for library services in the public libraries of Meghalaya, India. They found that the surveyed libraries had the basic ICT infrastructure; however, CCTV was not available in most libraries, while RFID was not available in any library. It was recommended that the facilities available be significantly improved and all libraries should be equipped with RFID technology because this is the most important tool for running a library in an ICT-based environment. Ghalavand and Karimi (2020) explored the status of ICT in public libraries in Iranian cultural centres and reported poor ICT facilities in the surveyed libraries. It was found that 7.5 % of libraries had audiobooks, 12.5% had e-books and only 1.25 % of libraries had access to full-text databases. The conditions of e-books in the study libraries were also very weak; 7.5% of libraries offered e-services and only 1.25% of libraries had the digital library. It was proposed that there should be written policies for the use of ICT, an adequate budget should be allocated for the procurement of ICT devices and proper training should be given to the librarian.

Rana and Bhatti (2020) examined the use of ICT in the collection management of public libraries, Punjab, Pakistan. It was found that there were insufficient printed information resources as well as a lack of professional staff. The majority of the libraries lacked IT personnel, and their ICT resources were in poor condition. The most pressing obstacles were also identified in implementing ICT as interrupted power and scarcity of funding. The authors suggested that libraries must develop ICT infrastructure and ensure the recruitment of skilled IT staff.

Strover (2019) studied the hotspot loan program of the New York and the Brooklyn public libraries. These mobile devices had internet packages and borrowed by library users to access the internet. These devices were checked out by the poor population (66%) and predominantly by Afro-American (33%). They used these devices at home, workplace, public places and during travelling. The most common purposes of hotspots usage were gaming, emailing, schoolwork, watching videos, finding local information and seeking health information.

Anna (2018) surveyed the websites of public libraries in Indonesia and found that 55% of the libraries did not have their websites. The findings show that 26% of libraries had OPAC, only 6% had e-resources and no single library offered services like chat reference, external services and user forums. The websites library information about services, collection, operating hours and organization and library-related events. In the public library of Kempton Park, South Africa,

Lediga and Formbad (2018) investigated the use of ICT resources. The users used ICT tools for education, research and job hunting. The study also highlighted obstacles in ICT use, including less time allocated to use these facilities in the library, low internet speed, limited computers and insufficient ICT resources. It was suggested that authorities should ensure ICT facilities and high-speed and internet in all public libraries.

Kaur and Walia (2015) studied the ICT infrastructure, human resources, collection management and the services of public libraries, Delhi, India. All these parameters were checked with international standards and found no library had adequate ICT infrastructure, human resources and information resources. The libraries' collection was in English, Hindi, Urdu and Punjabi languages and used DDC and UDC to organize these resources. The collection was consisted of books, serials and reference materials, whereas none of the libraries had electronic information resources. In public libraries in Australia, Kelly (2015) assessed the collection development policies by reviewing the libraries' website. The contents of the collection development policies were grouped into six categories, which include selection methodologies, management planning and budgeting, collection range and depth, professional judgment, discerning material standards and balancing collection priorities. It was concluded that the libraries stressed in the selection and evaluation of information resources. Chandrasekar (2013) reported that the biggest challenge of Public Libraries in Jaffna, Sri Lanka was the lack of ICT equipment. It is suggested that efforts be made to use new technology to automate library operations, use IT to improve information access and obtain licenses for remote access to e-resources.

Mainka et al. (2013) evaluated the public library services in information world cities. The researchers selected 31 informational world cities' public libraries and inspected their digital and physical services via their web pages. These libraries offered digital services like they had website and OPAC of their resources, free e-resources, a guide to the digital library, digital reference service, social media and applications for mobile devices. All libraries offered services like spaces for children, rooms for learning, getting together, spaces for drinking & food and modular working spaces. Al-Qallaf and Al-Azmi (2002) examined the availability and use of IT facilities in Kuwait's public libraries. The results show that the development of information technology was still in the embryonic stage because only eight libraries had IT facilities, while 15 did not have any IT-related technology. The factors delaying IT development were because the lack of proper planning, insufficient funding, limited human resources and poor infrastructure. It was suggested that the

libraries should develop IT infrastructure, develop web environment, subscribe databases and trainings to LIS professionals to cope with this digital era.

### **Objectives of the Study**

This research study was focused on the following objectives:

- To see the public library scenario in Khyber Pakhtunkhwa
- To report the demographic information of public libraries
- To check the status of electronic information resources in public libraries.
- To assess the ICT facilities in the public libraries
- To find out the use of ICT applications in the delivery of library services
- To identify the problems being faced by the public libraries in developing ICT infrastructure

### **Research Design and Methodology**

The quantitative research design was adopted, and survey was conducted to achieve the desired objective of the study. All the public libraries, working under the administrative control of the Directorate of Archives & Libraries, Khyber Pakhtunkhwa were the population of the study. There were 18 public libraries in the province; therefore, the census-based approach was used, and data was collected from the whole population. The required data was gathered from the librarians or in-charge of public libraries.

The questionnaires of Mirza (2010) and Waqar (2016) were modified as per the objectives of the study. A draft questionnaire was prepared, which was then reviewed by the experts, which have already carried out research studies in this field. The suggestions and changes mentioned by the experts were incorporated into the instrument. The questionnaires were then distributed among the respondents via their postal and email addresses and 18 duly filled questionnaires were received. All the received questionnaires were considered for data analysis. The collected data was analyzed using Statistical Package for Social Sciences (version-23) and descriptive statistics were applied to analyze the data and interpret the results.

Furthermore, the paper's references are prepared and formatted in accordance with the Publication Manual of the American Psychological Association (APA 6th ed.). Moreover, EndNote x8, a citation management application, was used to manage and organize the references.

## Data Analysis and Interpretations

The collected data was analyzed according to the objectives of the study and the results are presented in tables with interpretation.

### Public Libraries in Khyber Pakhtunkhwa

The survey identified eighteen public libraries in the Khyber Pakhtunkhwa administered by the Directorate of Archives and Libraries. Shuhada-e-Army Public School Memorial Library Peshawar was the oldest library; it was previously called archives & libraries established in 1946 and renamed after the incidence of Army Public School (APS), Peshawar. Table 1 shows that just two libraries were founded between 1947 and 2000. However, in the last two decades (2000 - 2020), the provincial government established fifteen libraries in various districts of the province.

Table 1

#### *Public Libraries in Khyber Pakhtunkhwa*

S. No.	Name and Location of Library	Year of Establishment
1.	Shuhada-e-Army Public School Public Library Peshawar	1946
2.	Mardan Public Library, Mardan	1990
3.	Abbottabad Public Library, Abbottabad	1993
4.	Rehman Baba Public Library, Peshawar	2005
5.	Bannu Public Library, Bannu	2007
6.	Sawabi Public Library, Sawabi	2007
7.	Mufti Mahmood Public Library, D I Khan	2009
8.	Swat Public Library, Swat	2010
9.	Hakeem Abdussalam Public Library, Haripur	2013
10.	Khushal Khan Khattak Memorial Library Akora Khattak, Nowshehra	2014
11.	Timergara Public Library, Dir	2014
12.	Lakki Public Library, Lakki Marwat	2016
13.	Kohat Public Library, Kohat	2017
14.	Chitral Public Library, Chitral	2017
15.	Charssada Public Library, Charsadda	2019
16.	Buner Public Library, Buner	2020
17.	Ghazi Public Library, Haripur	2020
18.	Mansehra Public Library, Mansehra	2020

### Demographic Information of the Respondents

This section presents demographic information of the respondents in terms of gender, designation, experience and qualifications. All these statistics are mentioned in Table 2. The data demonstrate that out of 18 LIS professionals, 16(88.9%) were male and 2(11.1%) were female.



The majority (72.2%) of respondents were librarians; there was a chief librarian, a library incharge and three respondents with other designations. Table 5.1 also presents statistical information about the experience of the LIS professionals. The data reveals that the majority, 7(38.9%) of the respondents, had up to 5 years of experience, followed by 5(27.8%) with 6-10 years of experience, 1(11.1%) respondents identified with 11-15 years of experience, 2(11.1%) with 16-20 years of experience and 3(16.7%) of respondents had more than 20 years of experience.

The survey respondents were also inquired regarding their educational qualifications. The statistics disclose that 17(94.4%) respondents were Master of Library and Information Science (MLIS) while one respondent had a Ph. D qualification.

Table 2  
*Demographic Information of Respondents*

<b>Gender</b>	<b>Frequency</b>	<b>Percentage (%)</b>
Male	16	88.9
Female	2	11.1
<b>Designation</b>		
Chief Librarian	1	5.6
Librarian	13	72.2
Library Incharge	1	5.6
Others	3	16.7
<b>Experience</b>		
Up to 5 years	7	38.9
6-10 years	5	27.8
11-15 years	1	5.6
16-20 years	2	11.1
> 20 years	3	16.7
<b>Qualifications</b>		
Ph.D. LIS	1	5.6
MLIS	17	94.4

### **Status of Human Resources**

Human resources comprise all the staff who manage a library or library system, including its director, librarians, para-professionals, technical assistants, accountants, clerks, etc. This section presents information about the human resources of the surveyed libraries, which includes LIS professionals, IT professionals and IT para- professionals.

The data given in Table 1 stipulate that 3 (16.7%) libraries had no LIS professional, 5(27.8%) libraries worked with one professional and 8(44.4%) libraries had 2 LIS professionals.

There was 1(5.6%) library functioning with one professional and 1 (5.6%) library worked with more than three professionals. Findings reflect the shortage of IT professionals in the libraries, 5(27.8%) libraries had no IT professionals, 10(55.6%) libraries were working with 1 IT professional, 2(11.1%) had 2 IT staff and one library worked with more than 2 IT staff members.

The responses of the respondents regarding the status of IT para-professional staff are indicated in Table. They are the staff with a certificate or diploma in Information Technology (IT). There were 8(44.4%) public libraries without IT para-professional staff, 8(44.4%) libraries had only one staff and 1(5.6%) library worked with two staff and one worked more than 2 IT para-professional staff.

Table 3  
*Status of Human Resources*

<b>LIS Professionals</b>	<b>Frequency</b>	<b>Percentage (%)</b>
0	3	16.7
1	5	27.8
2	8	44.4
3	1	5.6
>3	1	5.6
<b>IT Professionals</b>		
0	5	27.8
1	10	55.6
2	2	11.1
>2	1	5.6
<b>IT Para-Professionals</b>		
0	8	44.4
1	8	44.4
2	1	5.6
>2	1	5.6

### **Electronic Information Resources**

Electronic information resources are the electronic representation of information; these are available in various forms like e-books, digital libraries, databases, e-journals, e-zines, theses, research reports and conference papers (Moyo, 2004; Nicholas, Huntington & Jamali, 2007; Thanuskodi & Ravi, 2011). According to the International Federation of Library Associations and Institutions (IFLA), the public library should have a wide variety of materials in different formats and in appropriate quantities to meet the community's needs (Koontz & Gubbin, 2010). This

section provides information about the electronic information resources available in the public libraries.

The data given in Table 4 are very astonishing because most of the library lacked electronic information resources. 15(83.3%) libraries did not have any CD/DVD Rom databases, 15(83.3%) libraries had no e-book collection, and 17(94.4%) libraries had no electronic thesis and dissertations. There was no single library that had a subscription of any database even though 15(83.3%) did not have the facilities to access the HEC digital library. Higher Education Commission (HEC) of Pakistan has institutional access to a wide range of online resources, which are further distributed to several institutions in Pakistan. This service is named as HEC digital library.

Table 4  
*Status of Electronic Information Resources*

<b>No. of CD/DVD Database</b>	<b>Frequency</b>	<b>Percentage (%)</b>
0	15	83.3
Up to 200	1	5.6
201-400	1	5.6
2500	1	5.6
<b>No. of E-books</b>		
0	15	83.3
Up to 2000	2	11.1
2001-3000	1	5.6
<b>Access of HEC Digital Library</b>		
Yes	3	16.7
No	15	83.3
<b>Electronic Theses and Dissertations</b>		
0	17	94.4
10	1	5.6

### **ICT Knowledge of Libraries' Heads**

The Heads/Incharge of public libraries were asked a set of 9 statements regarding their knowledge of IT, library solutions and applications. Two options (Yes and No) were given against each statement and the respondents had to select one of them. The participants' responses are listed in Table 5, which show that all the participants had the skills to work on Microsoft Office Suite, be aware of library automation, and work on integrated library software. There were 17(94.4%)

respondents who knew computer/IT, 16(88.9%) had the understanding of HEC digital library, 15(83.3%) had the skills of online information searching, 13(72.2%) respondents had knowledge of content management system, 10(55.6%) were able to work on institutional repository software, i.e., Calibre, Dspace, and got enough automation training.

Table 5  
*Respondents Knowledge of Computer/IT and Library Applications*

Statements	Frequency (%)	Percentage (%)
	Yes	No
I have the knowledge of computer/IT	17(94.4)	1(5.6)
I can work on MS Office	18(100)	0(0)
I am aware of library automation	18(100)	0(0)
I can work on integrated library software	18(100)	0(0)
I have got enough training in automation	10(55.6)	8(44.4)
I have knowledge of content management system	13(72.2)	5(27.8)
I can work on Calibre, DSpace	10(55.6)	8(44.4)
I have knowledge about HEC Digital Library	16(88.9)	2(11.1)
I have skills in online information searching	15(83.3)	3(16.7)

### **Status of ICT Facilities**

Information and communication technologies (ICT) are used in public libraries to collect, store, process and disseminate information and access the internet for appropriate educational and personal usage. Computers, printers, scanners, photocopying machines and TV sets form a part of the ICT hardware infrastructure. ICT helps members of public libraries to communicate and share information. The ICT facilities also contribute to the accessibility and visual attractiveness of public libraries. Keeping in view the importance of ICT in libraries, the data about ICT facilities were collected from the public libraries and discussed in this section of the study.

This section is categorized into areas including ICT facilities for library staff, ICT facilities for library users and use of ICT applications library services.

### **ICT Facilities for Library Staff**

The heads of libraries were asked to provide information about the ICT facilities provided by the administration of public libraries to their employees. This section discusses the current state of these facilities.

### **Computers and other ICT Equipments**

Table 6 discloses information about availability of personal computers (PCs), laptops, printers and scanners for the staff in the surveyed libraries. The statistics indicate that four libraries

had just one computer, one library had 3-4 computers, 2(6.7%) libraries possessed 5-6 computers and 11(61.1%) libraries were found with more than seven computers.

The heads of 12 (66.7%) libraries reported that they had no laptop while 6(33.3%) libraries had 1-2 laptops. The data about the status of printers demonstrate that 9(50%) libraries had just one printer, 7(38.9%) possessed two printers and 2(11.1%) libraries had more than three printers. It was amazing to know the 12 (66.7%) public libraries had no scanning facilities for their staff, 4 (22.2%) libraries had only one scanner, while 2(11.1) libraries have two scanners.

Table 6  
*Status of Computers and Other ICT Equipments*

<b>No. of Computers</b>	<b>Frequency</b>	<b>Percentage (%)</b>
1-2	4	22.2
3-4	1	5.6
5-6	2	11.1
>7	11	61.1
<b>No. of Laptops</b>		
No	12	66.7
1-2	6	33.3
<b>No. of Printers</b>		
1	9	50.0
2	7	38.9
3	2	11.1
<b>No. of Scanners</b>		
No	12	66.7
1	4	22.2
2	2	11.1

### **Miscellaneous ICT Equipments for Library Staff**

The data regarding the availability of various ICT equipment was collected and presented in Table 7. The data shows that most of the libraries did not have ICT of equipments, including microfilming machines (88.9%), barcode readers (88.9%), external hard drives (88.9%), digital cameras (83.3%), television (77.8%) and multimedia projectors (72.2%). On the other hand, 16(88.9%) libraries had photocopier machines and 14(77.8) libraries had UPS facilities.

Table 7  
*Miscellaneous ICT Equipments*

<b>Name of Equipment</b>	<b>Frequency (%) 0</b>	<b>Frequency (%) 1</b>	<b>Frequency (%) &gt;1</b>
Television	14(77.8)	2(11.1)	2(11.1%)
Photocopying machines	2(11.1)	16(88.9)	-
Multimedia projectors	13(72.2)	5(27.8)	-
Microfilming machines	16(88.9)	2(11.1)	-
Barcode readers	16(88.9)	2(11.1)	-
UPS	4(22.4)	12(66.7)	2(11.1%)
Digital cameras	15(83.3)	3(16.7)	3(2.5%)
External hard drives	16(88.9)	2(11.1)	-

### **ICT Facilities for Library Users**

The heads of public libraries were also inquired about what ICT facilities are being offered to their users. This section presents information about the status of ICT facilities provided by the public libraries to their users and visitors.

### **Computers for Library Users**

The information collected from the librarians/incharge of public libraries concerning computers' availability is displayed in Table 8. The statistics show that one library (5.6 %) had up to 5 computers, 14(77.8%) libraries possessed 6-10 computers, 2(11.1%) libraries had 11-15 computers and 1(5.6%) library had more than with 15 computers.

Table 8  
*Computers in Public Libraries for Library Users*

<b>No. of Computers</b>	<b>Frequency</b>	<b>Percentage (%)</b>
Up to 5	1	5.6
6-10	14	77.8
11-15	2	11.1
> 15	1	5.6

### **Miscellaneous ICT Facilities for Library Users**

Information about the ICT facilities available to library users was gathered from public libraries. As shown in Table 9, 13(72.2%) libraries had internet and Wi-Fi facilities for library users, 12(66.7) had photocopier machines and 9(50%) libraries had printing and scanning facilities. Many libraries lacked ICT facilities like Online Public Access Catalogue (88.9%), 9(50%) libraries did not have printing and scanning facilities, and internet and Wi-Fi facilities were not available in 5(27.8%) libraries.

Table 9  
*Miscellaneous ICT Facilities*

ICT Facilities	Yes	No
	Frequency (%)	Frequency (%)
Internet	13(72.2)	5(27.8)
Wi-Fi	13(72.2)	5(27.8)
Printer	9(50)	9(50)
Scanner	9(50)	9(50)
Photocopier	12(66.7)	6(33.3)
OPAC	2(11.1)	16(88.9)

### ICT Tools used for the Delivery of Library Services

A vast amount of information is generated and transmitted from all corners of the world. The libraries faced problems in catering and fulfilling the demand of the users in a minimum time. At the global level, ICT products & services have been adopted by libraries to overcome the situation. Thus, data was collected from the public libraries to check how much they have adopted modern communication channels to provide services.

The data in Table 10 specifies that the libraries adopted some ICT tools and applications in the delivery of services, including personal email (100%), Facebook (100%) and WhatsApp (66.7%), and websites(66.7%). There were only 3(16.7%) libraries practicing both Twitter and YouTube for library services and only one library used applications like LinkedIn, Flickr and RSS for library services.

Table 10  
*ICT Applications used for Library Services*

ICT Applications	Frequency (%)	Percentage (%)
	Yes	No
Personal E-mail	18(100)	00(0)
Facebook	18(100)	00(0)
WhatsApp	12(66.7)	6(33.3)
Twitter	3(16.7)	15(83.3)
Website	12(66.7)	6(33.3)
Blog	6(5)	113(95)
YouTube	3(16.7)	15(83.3)
LinkedIn	1(5.6)	17(94.6)
Flickr	1(5.6)	17(94.6)
RSS	1(5.6)	17(94.6)

### Problems Faced by Libraries in Developing ICT Infrastructure

The heads of libraries were asked what significant problems they are being faced while developing ICT infrastructure. The information was gathered from the heads of libraries on a five-point rating scale and presented in Table 11.

The collected data reveals that 12 statements received a mean value higher than 4, indicating that most libraries faced these problems. The statement limited electronic resources/databases was ranked highest with a mean score of 4.72, followed by limited human resources and lack of financial resources each received a mean score of 4.55 and the statements interrupted power supply and non-availability of technical support each received means score of 4.38.

The other problems identified by the respondents which received high mean score were lack of commitment from the management ( $\mu=4.33$ ), lack of IT expertise among users ( $\mu=4.22$ ), lack of initiative among LIS professionals in introducing IT-based resources & services ( $\mu=4.22$ ), reluctance among library users to use IT ( $\mu=4.16$ ), insufficient IT literate staff ( $\mu=4.16$ ), lack of awareness about the potential of IT among library staff ( $\mu=4.05$ ), Reluctance among LIS professionals to use IT ( $\mu=3.83$ ) and non-availability of standard integrated library software on affordable price ( $\mu=3.77$ ).

Table 11  
*Problems of Libraries*

Statement	Rank	Mean	SD	Variance
Limited electronic resources/databases	1	4.72	.57451	.330
Limited human resources	2	4.55	.78382	.614
Lack of financial resources	2	4.55	.61570	.379
Interrupted power supply	3	4.38	.97853	.958
Non-availability of technical support	3	4.38	1.14475	1.310
Lack of commitment from the management	4	4.33	.90749	.824
Lack of IT expertise among library users	5	4.22	1.06027	1.124
Lack of initiative among LIS professionals in introducing IT based resources & services	5	4.22	1.06027	1.124
Reluctance among library users to use IT	6	4.16	1.04319	1.088
Insufficient IT literate staff	6	4.16	1.15045	1.324
Lack of awareness of IT among LIS professionals	7	4.05	1.10997	1.232
Reluctance among LIS professionals to use IT	8	3.83	1.20049	1.441
Non availability of standard integrated library software on affordable price	9	3.77	1.43714	2.065

Note: 5= Strongly Agree, 4= Agree, 3= Neutral, 2=Disagree, 1=Strongly Disagre



## Discussion

The public library is known as a people's university and not restricted to any group of users. All kinds of people are expected to be served, including young children and people with disabilities (Abdulahi, Yaya & Saidu, 2020). The current study was conducted to assess the ICT facilities in the public libraries of Khyber Pakhtunkhwa. The findings reveal that most respondents were male and hold degrees of Master in Library and Information Science (MLIS).

The most important asset of an organization is that the human resource and other assets become meaningful only when they transform them into usable resources (Wani, 2006). The results show that 16.7% of libraries had no professional staff and were run by non-professional and unskilled staff, while 27.8% of libraries had one professional. Mahmood (2006) also argued that 20-30% of public libraries of the country had professional staff while the remaining were run by non-professional and clerical staff. There was a shortage of IT professionals in libraries, as 27.8% of libraries did not have IT professionals; Rana and Bhatti (2020) also found that the majority (76.48%) of public libraries in Punjab did not have IT staff.

With the advancements in technology for the acquisition, storage, organization and dissemination of information, Information and Communication Technologies (ICT) have become an integral part of libraries (Wawu, 2019). It was found that most of the libraries had either deplorable or no IT infrastructure. It was astonishing to know that a significant number of libraries did not have ICT apparatus, including laptops, photocopier machines, multimedia projector, scanners, printers, UPS equipment, external hard drive, digital camera and Wi-Fi & internet connectivity. Mahmood (2008) explored the inadequate ICT facilities and stated that 30-40% of public libraries used computers. Rana and Bhatti (2020) opined that the overall condition of ICT resources in public libraries of Punjab was very poor. The study's findings are also supported by those identified by Sing (2012); Chandrasekar (2013) ; and Zaman (2015).

The findings illustrate that the heads of libraries identified some problems faced by the libraries while developing ICT infrastructure. The major issues were limited electronic resources, limited human resources, lack of financial resources, interrupted power supply, non-availability of technical support, lack of commitment from the management, insufficient IT literate staff and non-availability of standard library software at an affordable price. The previous researchers also identified similar problems faced by the country's public libraries (Baqi, 2016; Hussain & Haroon,

2021; Rafi, Ali & Ahmad, 2016; Saleem, Bhatti & Nadeem, 2011; Taufiq, Rehman & Ashiq, 2020).

### **Recommendations**

Public libraries are open access non-profit organizations acting as “People Universities” to provide the best possible services to the people of the community and to develop ICT infrastructure; the following suggestions are given:-

- Extension services may be introduced to attract the public to effectively use library resources and enhance the library's membership. User education activities should be performed to inform the public about the library, resources, facilities and practices and guide them on how the library can solve their daily problems.
- Most of the libraries had a shortage of staff; the staff in the libraries also need much improvement. The LIS professional staff must be recruited and trained in modern learning, education and communication skills. Also, the head/in-charge of each library must be a professional librarian. Moreover, IT professionals' staff should be recruited in all libraries to provide guidance in the implementation of IT infrastructure and resolve the IT-related issues faced by the staff and the users.
- The library staff should be trained about automation and content management systems to automate the libraries and develop their digital libraries/repositories.
- Every library should have a computer lab equipped with computers, internet and Wi-Fi connectivity, where users could browse and access scholarly literature.
- The ICT infrastructure of public libraries needs much improvement. There were few libraries with computers, printers and photocopying equipment that should be expanded to all public libraries. ICT equipment and accessories such as laptops, databases, network servers, multimedia projectors, digital cameras, UPS, scanners, backup devices such as hard disk and DVD/CD could be acquired as these are essential requirements of the technological and digital age.
- Electronic information resources such as e-books, e-journals and ETDs, should be procured by libraries. All public libraries should have the HEC digital library subscription to give library users opportunities to access the world's scholarly literature.

- Seminars or workshops on open-access databases should be organized for library staff to raise awareness of these databases. The libraries can then develop their e-book and e-journal collection.
- ICT tools such as e-mail, Facebook, Twitter, Flickr, Blogs, WhatsApp, YouTube and the website could be used to provide quick service to library users.
- A sufficient fund should be provided to all public libraries to acquire ICT apparatus and acquire electronic information resources. The heads of libraries should have the power and freedom to spend the budget based on the users' needs.
- It was identified that the public libraries were facing many challenges. The government and the departments concerned should work and make appropriate arrangements to address all these issues so that these information hubs actively serve society.

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