September 2024

Awareness and Use of Open-Source Integrated Library Systems (ILS) Among University Librarians in Pakistan

Irfan Ali Tahmoor Hussain
Allama Iqbal Open University, irfan.tahmoor@gmail.com

Farhana Saeed Hashmi
minhaj university Lahore, ferhana.lis@mul.edu.pk

Dr. Muhammad Tariq
COMSATS Institute of Information Technology, Lahore, tariqnajmi@cuilahore.edu.pk

Awareness and Use of Open-Source Integrated Library Systems (ILS) Among University Librarians in Pakistan

Irfan Ali Tahmoor Hussain
Allama Iqbal Open University, Islamabad, Pakistan

Farhana Saeed Hashmi
Minhaj University Lahore

Dr. Muhammad Tariq
Comsats University, Lahore

Abstract

This study investigates the awareness and utilization of Open-Source Software (OSS) for library automation within the context of University Libraries in Pakistan. Through a comprehensive survey of University Librarians, the research explores the extent of OSS adoption, with a focus on specific systems such as Koha and SLiMS. The findings show a high level of awareness and active use of OSS, particularly Koha, in library automation processes. Public sector universities demonstrate a greater inclination towards OSS adoption compared to private and semi-government institutions. The study outlines the predominant purposes for utilizing OSS, emphasizing cataloging and circulation services. Furthermore, it highlights the duration of OSS usage, indicating a recent but growing trend in adoption. While the study provides valuable insights into positive trends in OSS utilization, it falls short of addressing potential challenges faced by librarians in the adoption process. The results underscore the significance of OSS solutions, calling attention to their role in enhancing library services and operational efficiency in Pakistani university libraries.

Keywords – Pakistan, Open-Source Systems, Library Automation, Integrated Library System, Librarians

Introduction

Open-Source Software (OSS) can be a way forward for the provision of effective and efficient library services without the fears of being captured by the over hiking budgeting constraints for academic libraries. In a country like Pakistan which is facing economic crisis, open-source option can be a blessing for libraries. In the digital and information age, information and communication technology (ICT) empowers libraries to expand their services. Open-source software is currently used by libraries all over the world. (Lamani & Sedam, 2021). OSS is widely used in higher education institutes of Pakistan to manage Library collection, provision of information services such as Online Public Access Catalogue (OPAC), and maintain patron records as well.

Pakistan's library automation started with locally created databases, which have been gradually taken over by the OS Integrated Library System. (Ramzan & Singh, 2009). according to Barve and Dahibhate (2012) OSS applications became available online after 1997. Lihtikar (2012) discussed the various types of software including Proprietary (Commercial) Software, Shareware Software, Freeware Software and Free/Open-Source Software (FOSS). A major development in Web 2.0 community-based, community-built, and publicly available software is open source (OSS). Furthermore, as Koha is a technological development that could solve the challenge of library automation, it's important to think about the factors that support or impede its adoption. There are several Open-Source Integrated Library Systems available on the market; nevertheless, their common use, low cost, and additional advantages—such as increased efficiency, flexibility, and customization—make them desirable (Khan & Ayesha, 2021).

Literature Review

The incredible growth and development of information technology is transforming the way we access, store, distribute, and use information in our daily lives. The rapid advancement of ICT and digital technologies, in addition to enhanced compatibility of automation and digital content management initiatives, led to the prolific development. Software has become more and more popular over the last few years. Additionally, it has enormously boosted the literature on open-source software in libraries. According to published literature, the first software used in libraries around the 1960S in United Stated, after that library software has grown in popularity all over the world.

Mahmood, 1999 stated that Libraries now provide fast and accurate information services because to computer technology. Nevertheless, in Pakistan. The majority of libraries bought or created software independently of one another. The Lahore libraries were using a wide range of software (Shafique & Mahmood, 2007).

The software that programmers create and utilized in both production and consumption processes, including the development of computers and mobile devices, everyday developing such software accurately and use is essential for software companies as it grows more popular and necessary (Asemi et al., 2010).

Research libraries and other educational and cultural institutions must rapidly assess the value of their services and provide evidence of their influence in the context of a constantly changing

scholarly and information environment. There are numerous considerations to be considered while adopting an open-source system. These factors include the sorts of applications used, the number of organizations involved, as well as stakeholder and end-user buy-in and capacity to embrace the tools for their use (Kanter et al., 2012).

These days, the number of libraries is always growing, and the software industry is expanding quickly. The software industry has played an important role because it affects practically every aspect of human life. Calp et al., 2015). To automate their processes, libraries use a variety of library software. Like other technology, integrated library systems are essential in assisting libraries to operate their operations more quickly and efficiently. All traditional library functions can now be completed quickly and efficiently because of an integrated library system (Siddique & Mahmood, 2016).

The creation and growth of digital libraries, which are commonly considered well-managed collections of electronically accessible documents available online on specific platforms with facilities for search and consultation (Primbault, 2022).

Research Questions

RQ1. What is the level of awareness and use Open-Source library automation software by university librarians of Pakistan?

RQ2. Which are the most Used of Open-Source Library Automation Software by University Libraries of Pakistan?

RQ3. What is the status of Library Automation among the university libraries of Pakistan?

RQ4. What are the Number of Library Collection and Patron mange by OSS?

RQ5. What is the OPAC accessibility status of Open-Source Library Automation Software?

RQ6. Which is the personnels involve in the development of Open-Source Library Software?

RQ7. What is the main purpose of utilization of open-source library automation?

Methodology

The survey questionnaire

The data for this study were collected using an online Questionnaire which was designed on Google Form to obtain the response from university Librarians of Pakistan Survey instrument was distributed through emails and requested them to take on the survey. The instrument has three parts. The first part garnered demographic information of the respondents, type of university, gender, level of education, work experience, total library collection, number of library patron, status of accessibility, personnel information, duration. The second part consisted of questions relating awareness. Selected library automation software namely Koha, Evergreen, SLiMS response were recorded. Five points Likert scale were used to record the response which are the 1-Not at all aware; 2-Slightly aware; 3-Somewhat aware; 4-Moderately aware; 5-Fully aware. The third part consisted of questions pertaining to utilization of an open-source library automation software, response to these items were recorded as 1-Strongly disagree; 2-Disagree; 3-Neutral; 4-Agree; 5-Strongly agree. A total of 157 (72.35%) out of 217 responses were received and for statistical analysis using IBM SPSS 21. The data were analyzed by descriptive statistics.

Selected open-source Integrated Library System

Koha

Koha is a web-based free and OSS library system, a scalable library management system with all the features. Used world-wide by public, academic and special Libraries. Its Initial was released January 2000 by Katipo Communications New Zealand, written in Perl, JavaScript & HTML is run on the operating system Linux. It's available in 26 languages. Libraries of all shapes and sizes, volunteers, and support organizations from around the world all contribute to development. The Koha's official site offers various support like Community Support, Koha Mailing Lists, Paid Support & Report a Problem. Koha modules mentioned in Table 1.

Table 1

Koha Modules

Koha offers the following Modules:	
1. Cataloguing	5. Acquisitions

2. Authorities	6. Serial Management
3. Circulation & Offline Circulation	7. OPAC
4. Borrowers Management	8. Koha Administration

Evergreen

Evergreen is an Integrated Library System (ILS) that was developed as an Open-Source ILS by the Georgia Public Library Services for the Public Information Network for Electronic Services (PINES), Its Cross Platform Open-source software was initial releases on September 2006. Features of Evergreen are mentioned in below Table 2:

Table 2

Evergreen Features

Evergreen offers the following Features:	
1. Circulation	2. Acquisitions
3. Cataloguing	4. Authorities
5. Online Public Access Catalog (OPAC)	6. Serials
7. Self-services	8. Statistical Reporting
9. Web-Based Staff Client	

SLiMS (Senayan Library Management System)

Senayan Library Management System (SLiMS) is an open-source integrated library system designed to manage and automate library activities. It is specifically developed for small to medium-sized libraries, and it provides a range of features to facilitate library operations. Features of SLiMS are mentioned in Table 3.

Table 3

SLiMS Features

SLiMS offers the following Features	
1. Bibliography Database	2. Digital Contents Management
3. Circulation	4. Serial Publication Control
5. Membership Management	6. Reporting and Statistics
7. OPAC	

Data Collection

The researcher collected data from different types of universities in Pakistan in this research survey. The numerical data were analyzed through SPSS software and Table 4 represent the Type of universities overall in the country. In public Universities, 83 (52.9 %) responded, Private 69 (43.9%), and Semi-Government 4 (2.5%) responded to the survey. This data is also a gender representation of all HEC of Pakistan's public and private sector universities.

Table 4

Type of University	N	(%)
Public	84	53.5
Private	69	43.9
Semi Government	4	2.6

Data Analysis and Interpretation

Demographic Information of the Respondents

In this survey 157 LIS professionals that participated from different universities of Pakistan in this survey, the vast majority of the respondents were male (75.2 per cent), only 24.8 per cent of them were female (Table 6). The present survey shows higher gender diversity. All the respondents had MLIS or MPhil or PhD degree or other degree holder or BLIS. More than 50 per

cent (54.14 per cent) of the respondents had MLIS or equivalent degree, 33.76 per cent of them had MPhil degree, 5.10% per cent were other degree holder, Ph.D. LIS 4.46%, and BLIS 2.55%. Higher educational qualification positively influences the LIS professional's level of awareness and use of an open-source software. As professional experience is one the predictor of the awareness and use of any IT tools and services, question on the professional experience was asked to the respondents. In the work experience, there were 4 selections i.e. 1-10 years, 11-20 years, 21-30 years, and More than 30 years were given for the question to answer. Results show in table 4 that 69 (43.95%) library professionals among the respondents have experience from 10 to 20 years. It is followed by 32.48% (32.48%) respondents having of 5-10 years of experience, 20(12.74%) were in the category of above 20 years of experience, and 17 (10.83%) Below 5 years.

Table 6

Item	N	(%)
Gender		
Male	118	75.2
Female	39	24.8
Qualification		
MLIS	85	54.1
MPhil LIS	53	33.8
Other	8	5.1
PhD LIS	7	4.5
BLIS	4	2.5
Experience		
10-20 years	69	43.9
05-10 years	51	32.5
Above 20 years	20	12.7
Below 5 years	17	10.8

Open-Source Library Automation

The Table 6 represent the usage of Open-source software for library automation 107, (68.2%) out of 50 (31.8%) responded Yes rest responded No. as well as the level of library automation libraries fully automated 58 (54.2%) and partially automated 49 (45.8) % were recorded.

Table 1

Item	N	%
Usage of OS Library Automation		
Yes	107	68.2
No	50	31.8
Level of Library Automation		
Fully Automated	58	54.2
Partially Automated	49	45.8

Universities Libraries Collection and Patron

Table 7 represents the number of library collection automated the responded response. Firstly 10,000-50,000 49 (45.8%), secondly Above 50,000, 24 (22.4%), thirdly 1000-10,000 3(29%), and fourthly below 1000 3(2.8%) responded and the numbers of library patron automated, above 3000 36 (33.6%), below 500 26(24.3%), 500-1000 25 (23.4%) 1000-3000 20 (18.7%) responses recorded.

Table 2

Item	N	%
Library Collection		
10,000-50,000	49	45.8
1000-10,000	31	29.0
Above 50,000	24	22.4
Below 1000	3	2.8
Library Patrons		
Above 500	36	33.6
Below 500	26	24.3
500-1000	25	23.4
1000-3000	20	18.7

Accessibility of OPAC, Personnel involved in development and Duration of using open-source library automation

Table 8 shows the university library provides access to their user the number of universities' accessibility are On Campus only 48 (44.9%), Publicly 47 (43.9%), and Off-Campus via VPN 12 (11.2%). Personnels involved in Open-Source Library Automation Software development are Library Professional 62(57.9%), Library Professional; IT Professional 28(26.2%), Library

Professional; IT Professional; Software Vendor 8 (7.5%), IT Professional 4(3.7%), Software Vendor 5 (4.7%). For the duration of using Open-Source Library Automation Software responded asked 4 selections question i.e., Below 5 years, 5-10 years, 11-20 years, and above 20, about the duration of open-source library automation in university libraries. They responded below 5 years 52 (48.6%), 5 - 10 years 39 (36.4%) 11 – 20 years 16, (15%) and zero percentage respond for above 20 years.

Table 3

Item	N	%
Access		
On-Campus only	48	44.9
Publicly	47	43.9
Off-Campus via VPN	12	11.2
Development Team		
Library Professional	62	57.9
Library Professional and IT Professional	28	26.2
Library Professional, IT Professional and Software Vendor	8	7.5
Software Vendor	5	4.7
IT Professional	4	3.7
Duration		
Below 5 years	52	48.6
5-10 years	39	36.4
11-20 years	16	15.0

Awareness of Open-Source Library Automation Software in the context of its modules and functions

In the Table 9, the values of the mean and standard deviation are presented. The researcher asked questions about the level of Awareness of Open-Source Library Software in the context of its modules and functions the Librarians from the selected OSS.

Means and standard deviations were used to estimate each item score separately, to check how responses were differing from the mean value of each statement. Awareness of Koha: Integrated Library System (ILS) (Mean=4.31, SD=.94), the result showing majority of librarian are aware about Koha ILS and the second OSS is SLiMS (Mean=2.90, SD=1.43), slightly aware about it. Thirdly OSS is Evergreen: Integrated Library System (Mean=2.53, SD=1.40), majority are not aware about this software.

Table 9

Awareness of OSS Library Automation

Statements	Mean	SD
Koha: Integrated Library System (ILS)	4.31	0.94
SLiMS: Senayan Library Management System	2.9	1.43
Evergreen: Integrated Library System	2.53	1.4

1-Not at all aware; 2-Slightly aware; 3-Somewhat aware; 4-Moderately aware; 5-Fully aware;

Gender wise Awareness of OSS Library Automation

Means and standard deviations were used to measure gender wise separately, to check Awareness level of selected OSS. The awareness of Koha: Integrated Library System (ILS) male (Mean=4.33, SD=.93) and female (Mean=4.27, SD=99), the result showing majority of male librarian are aware about Koha ILS and the second OSS is SLiMS male (mean=3.05, SD=1.47), female (Mean=2.51, SD=1.24) aware about it. Thirdly OSS is Evergreen: Integrated Library System male (Mean=2.61, SD=1.41), female (Mean=2.31, SD=1.36) majority are not aware about this software.

Table 10

Gender wise Awareness of OSS Library Automation

Statements	Male	Female	Total

	Mean	SD	Mean	SD	Mean	SD
Koha: Integrated Library System (ILS)	4.33	.93	4.27	.99	4.31	.94
SLiMS: Senayan Library Management System	3.05	1.47	2.51	1.24	2.90	1.43
Evergreen: Integrated Library System	2.61	1.41	2.31	1.36	2.53	1.4

1-Not at all aware; 2-Slightly aware; 3-Somewhat aware; 4-Moderatelyaware; 5-Fully aware;

The Table 11 shows the awareness of the open-source library automation system by the sector wise universities of the Pakistan the results are (Mean= 4.51, SD= 0.79), Private (Mean= 4.14, SD= 103), Semi Government (Mean= 3.66, SD= 1.52) the majority public sector universities libraries are the aware about OSS Koha ILS as well as private and semi-government, secondly Librarians are aware about SLiMS (Mean= 2.77, SD= 1.32), Private (Mean= 3.00, SD= 1.49), Semi Government (Mean= 3.66, SD= 2.30). Thirdly Evergreen (Mean= 2.51, SD= 1.39), Private (Mean= 2.54, SD= 1.40), Semi Government (Mean= 2.66, SD= 2.53).

Table 11

Statements	Public		Private		Semi-Government		Total	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Koha: Integrated Library System (ILS)	4.51	.79	4.14	1.03	3.66	1.52	4.31	.94
SLiMS: Senayan Library Management System	2.77	1.32	3.00	1.49	3.66	2.30	2.90	1.43
Evergreen: Integrated Library System	2.51	1.39	2.54	1.40	2.66	2.08	2.53	1.4

1-Not at all aware; 2-Slightly aware; 3-Somewhat aware; 4-Moderatelyaware; 5-Fully aware;

Utilization of the OSS Library Automation

The researcher asked ten (10) Questions regarding the utilization of the OS Library Automation Software. The questions were utilization of open-source library automation software Search books and library material through OPAC (Mean=4.72, SD=0.6), secondly was Check-in/Check-out books and library material to users (Mean=4.66, SD=0.64) third for cataloguing and classification of library material (Mean=4.65, SD=0.71), fourth is for Printing barcodes and slips/stickers for technical processing of library material(Mean=4.4, SD=0.822), fifth generate various statistical reports (Means=4.39, SD=0.86), sixth for sending reminders through E-mail, social media, and SMS for overdue and other notices (Means=4.27, SD=0.98), seventh for online registration of users (Means=4.26, SD=0.883), eighth to manage Serial collection(Mean=4.14, SD=1.08), ninth for secure books and library material through RFID integration (Mean=4.07, SD=1.13), tenth Ordering of books and library material (Mean=3.72, SD=1.18). the result shows that the main purpose of library automation is creating catalogue and provide circulation services to library users.

Table 12

Utilization of OSS Library Automation

Statements	Mean	SD
Search books and library material through OPAC	4.72	0.6
Check-in/Check-out books and library material to users	4.66	0.64
For cataloguing and classification of library material	4.65	0.71
For Printing barcodes and slips/stickers for technical processing of library material	4.4	0.822
Generate various statistical reports	4.39	0.86
For sending reminders through E-mail, social media, and SMS for overdue and other notices	4.27	0.98
For online registration of users	4.26	0.883
To manage Serial collection	4.14	1.08
For secure books and library material through RFID integration	4.07	1.13
Ordering of books and library material	3.72	1.18

1-Strongly disagree; 2-Disagree; 3-Neutral; 4-Agree; 5-Strongly agree;

Gender-wise utilization of OSS usage in Library Automation

Table 13 show the gender-wise utilization of Open-Source Library Automation. The responded results are male and female are selected the utilization OSS are for cataloguing and classification of library material Male (Mean=4.66,SD=.73) Female (Mean=4.62, SD=.67), secondly is To manage Serial collection Male (Mean=4.12 SD=1.12) Female (Mean=4.17, SD=1.00) thirdly is to ordering of books and library material Male (Mean=3.70, SD=1.19) Female (Mean=3.79 SD=1.17) for the utilization for acquisition, fourth is to search books and library material through OPAC Male (Mean=4.73, SD=.61) Female (Mean= 4.72 SD=.59), fifth is to Check-in/Check-out books and library material to users Male (Mean=4.65, SD=.64); Female (Mean=4.68, SD=.66); sixth for online registration of users Male (Mean=4.30, SD=.84) Female (Mean=4.13, SD=.99); seventh for Printing barcodes and slips/stickers for technical processing of library material Male(Mean=4.44, SD=.76) Female (Mean=4.27, SD=.95); eighth For sending reminders through E-mail, social media, and SMS for overdue and other notices Male (Mean=4.28 SD=.93) Female (Mean=4.24, SD=1.12); ninth Generate various statistical reports Male (Mean=4.39 SD=.79) Female (Mean=4.37, SD=1.04); tenth for secure books and library material through RFID integration Male (Mean=4.12, SD=1.08) Female (Mean=3.93,SD=1.25).

Table 13

Gender-wise Utilization of OSS Library Automation

Statements	Male		Female		Total	
	Mean	SD	Mean	SD	Mean	SD
For cataloguing and classification of library material	4.66	.73	4.62	.67	4.65	.71
To manage Serial collection	4.12	1.12	4.17	1.00	4.14	1.08
Ordering of books and library material	3.70	1.19	3.79	1.17	3.72	1.18
Search books and library material through OPAC	4.73	.61	4.72	.59	4.72	.60
Check-in/Check-out books and library material to users	4.65	.64	4.68	.66	4.66	.64
For online registration of users	4.30	.84	4.13	.99	4.26	.88

For Printing barcodes and slips/stickers for technical processing of library material	4.44	.76	4.27	.95	4.40	.82
For sending reminders through E-mail, social media, and SMS for overdue and other notices	4.28	.93	4.24	1.12	4.27	.98
Generate various statistical reports	4.39	.79	4.37	1.04	4.39	.86
For secure books and library material through RFID integration	4.12	1.08	3.93	1.25	4.07	1.13

1-Strongly disagree; 2-Disagree; 3-Neutral; 4-Agree; 5-Strongly agree;

Utilization of the OSS Library Automation by Sector-wise Universities

The Table 14 shows the utilization of the open-source library automation system by the sector wise universities of the Pakistan the results are Search books and library material through OPAC Public (Mean= 4.78, SD= 0.54), Private (Mean= 4.7, SD= 0.68), Semi Government (Mean= 4.33, SD= 0.58) the majority public sector universities libraries are the OSS for the creating online public access catalogue as well as private and semi-government, secondly for the utilization purpose is the Check-in/Check-out books and library material to users Public (Mean= 4.67, SD= 0.64), Private (Mean= 4.7, SD= 0.65), Semi Government (Mean= 4, SD= 0) majority public sector universities library are using the circulation module in OSS Library Automation. Thirdly the module of cataloguing and classification of library material Public (Mean= 4.72, SD= 0.6), Private (Mean= 4.68, SD= 0.65), Semi Government (Mean= 3, SD= 1.73) public sector universities libraries are using. And the other queries the public sector universities libraries are majority than public and semi-government. For Printing barcodes and slips/stickers for technical processing of library material Public (Mean= 4.43, SD= 0.81), Private (Mean= 4.4,

SD= 0.86), Semi Government (Mean= 4, SD= 0);Generate various statistical reports Public (Mean= 4.52, SD= 0.69), Private (Mean= 4.3, SD= 1.02), Semi Government (Mean= 3.67, SD= 0.58); For sending reminders through E-mail, social media, and SMS for overdue and other notices Public (Mean= 4.31, SD= 0.91), Private (Mean= 4.3, SD= 0.99), Semi Government (Mean= 3, SD= 1.73); For online registration of users Public (Mean= 4.2, SD= 0.79), Private (Mean= 4.36, SD= 0.98), Semi Government (Mean= 3.67, SD= 0.58); To manage Serial collection Public (Mean= 4.31, SD= 0.93), Private (Mean= 4.06, SD= 1.13), Semi Government (Mean= 2.33, SD= 1.53); For secure books and library material through RFID integration Public (Mean= 4.15, SD= 1.14), Private (Mean= 4.02, SD= 1.15), Semi Government (Mean= 3.67, SD= 0.58); Ordering of books and library material Public (Mean= 3.87, SD= 1.1), Private (Mean= 3.62, SD= 1.24), Semi Government (Mean= 3, SD= 1.73).

Table 14

Utilization of the OSS Library Automation by Sector-wise Universities

Statements	Public		Private		Semi-Government		Total	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Search books and library material through OPAC	4.78	0.54	4.70	0.68	4.33	0.58	4.73	0.61
Check-in/Check-out books and library material to users	4.67	0.64	4.70	0.65	4.00	0.00	4.66	0.64
For cataloguing and classification of library material	4.72	0.60	4.68	0.65	3.00	1.73	4.65	0.72
For Printing barcodes and slips/stickers for technical processing of library material	4.43	0.81	4.40	0.86	4.00	0.00	4.40	0.82

Generate various statistical reports	4.52	0.69	4.30	1.02	3.67	0.58	4.39	0.87
For sending reminders through E-mail, social media, and SMS for overdue and other notices	4.31	0.91	4.30	0.99	3.00	1.73	4.27	0.99
For online registration of users	4.20	0.79	4.36	0.98	3.67	0.58	4.26	0.88
To manage Serial collection	4.31	0.93	4.06	1.13	2.33	1.53	4.14	1.09
For secure books and library material through RFID integration	4.15	1.14	4.02	1.15	3.67	0.58	4.07	1.13
Ordering of books and library material	3.87	1.10	3.62	1.24	3.00	1.73	3.73	1.19

1-Strongly disagree; 2-Disagree; 3-Neutral; 4-Agree; 5-Strongly agree;

Discussion

The selected Open-Source Software majority of university librarians are aware regarding Koha ILS as well as its used in libraries also recorded. The usage of OS Library Automation Software 107 (68.2%) out of 157 its good number of OSS in Universities libraries in Pakistan. Mainly its usage for the Online Public Catalogue Access (OPAC) and secondly Check-in/Check-out books and library material to users for circulation purposes. Thirdly librarians also agreed to use for cataloguing and classification of library material, as well as printing barcodes & slips/stickers for technical processing of library material, also generate various statistical reports, sending library reminders from time to time through E-mail and SMS library transactions and other related notices, library and information professionals also agreed with the utilization of OSS library automation software for online registrations of library users, OSS library automation software also provides to manage serial collection module librarians was agreed to use for this purpose as well as protect the books through RFID integration and book acquire through ILS was also reported.

Major Finding

This study found that trend of open-source software is day by day increase in university libraries in Pakistan, librarians are eager to implement Open-Source software in their library for the expending services. The major finding of the study mention below:

Awareness and use of Specific OS Library Automation Software:

A high level of awareness and use of open-source Integrated Library Systems (ILS) among University Librarians in Pakistan, Specifically, Koha and SLiMS were identified as widely known and utilized OSS for library automation. It seemed that nearly all respondents were well aware of these software's and actively using them in their libraries.

Level of Library Automation:

OSS has been adopted by a majority of libraries for their automated tasks. Within the context of academic libraries, the use of open-source software is more widely used, as observed by the 68.2% of respondents who agreed they were utilizing it for automation of their libraries.

Koha ILS:

According to an online survey conducted among librarians, Koha, an open-source web-based library management system, is their preferred open-source software (OSS). Its features—such as circulation, acquisitions, cataloging, and others were recognized and actively used.

Usage:

The majority of respondents agreed that OSS is possibly used for various types of library functions. Such as searching books and library materials through Online Public Access Catalogue (OPAC), check-in/check-out processes, cataloging, statistical reporting, and user registration.

Gender and Sector-Based Variations:

Based on gender and the type of university (public, private, or semi-government), the survey considered variations in awareness and usage. The survey found that slight differences between male and female librarians, and public sector universities determined more effective awareness and utilization compared to private and semi-government institutions.

Duration of Usage:

A majority of respondents reported having used OSS for library automation for less than five years, there might seem to be an increase of recent adoption. This finding shows that in recent years, university librarians in Pakistan have become more aware of and willing to implement open-source software.

Purpose of Usage:

The main purposes of open-source library automation as used by librarians are cataloging and offering library patrons circulation services. The use of OSS for different library tasks is consistent with the overarching objective of enhancing university libraries' operational effectiveness and service provision.

Conclusion

The University Librarians in Pakistan are fully aware and use of open-source integrated library systems (ILS), specifically Koha and SLiMS. The open-source software has becoming day by day increasingly popular in the libraries, due to various features of open-source software such as enhancing information services, managing library holdings, and maintaining patron information. The majority of responders reported that Koha ILS is widely used and accepted in the library community of its widely usage and awareness. The main purpose of open-source library software by librarians to automate library tasks such as online public access catalogue, circulation, cataloguing patron registration, statistical report and etc. This shows how open-source solutions are flexible and effective in fulfilling the various needs of university libraries.

The research findings, divided into gender and sector-wise, show awareness and usage. Male librarians are more aware than female librarians and public sector universities are more aware and users than private and semi-government institutions. The study supports in the consideration and implementation of widely used open-source ILS like Koha. These open-source substitutes are now popular options for budget-conscious libraries because of their flexibility, cost, and support from the community.

Reference:

Asemi, A., Hosseini, Z. S., & Asemi, A. (2010). *Viewpoint of Librarians*. 340–345. https://doi.org/10.1109/ICICIS.2010.5534809

Barve, S., & Dahibhate, N. B. (2012). Open source software for library services. *DESIDOC Journal of Library and Information Technology*, *32*(5), 401–408. https://doi.org/10.14429/djlit.32.5.2649

Calp, M. H., Akcayol, H. A., & Calp, A. H. (2015). The importance of human---computer interaction in the development process of software projects. *Global Journal of Information Technology*, *05*(1), 48–54. www.awer---center/gjit

Kanter, A. S., Borland, R., Barasa, M., Iiams-Hauser, C., Velez, O., Kaonga, N. N., & Berg, M. (2012). The importance of using open source technologies and common standards for interoperability within eHealth: Perspectives from the millennium villages project. In *Advances in Health Care Management* (Vol. 12, pp. 189–204). https://doi.org/10.1108/S1474-8231(2012)0000012013

Khan, S. A., & Ayesha, G. (2021). Key features of information management systems (IMSs) for automation in university libraries: a view point of information professionals in Pakistan. *Library Hi Tech*. https://doi.org/10.1108/LHT-04-2020-0087/FULL/XML

Lamani, M. G., & Sedam, M. V. (2021). Open Source Softwares for Libraries: An Overview. *International Journal of Research in Library Science*, *7*(1), 176–180. https://doi.org/10.26761/ijrls.7.1.2021.1390

Lihtikar, S. R. (2012). Open source software for libraries. *DESIDOC Journal of Library and Information Technology*, *32*(5), 379–380. https://doi.org/10.14429/djlit.32.5.2645

Primbault, S. D. (2022). *Navigating Knowledge in the Digital Age: A Study of Researchers' Information-Browsing Practices in Digital Libraries Navigating Knowledge in the Digital Age A Study of Researchers' Information-Browsing Practices in Digital Libraries*. https://hal.archives-ouvertes.fr/hal-03727166

Ramzan, M., & Singh, D. (2009). Status of information technology applications in Pakistani libraries. *The Electronic Library*, *27*(4), 573–587. https://doi.org/10.1108/02640470910979543

Siddique, N., & Mahmood, K. (2016). Combating problems related to library software in higher education institutions of Pakistan: An analysis of focus groups. *Malaysian Journal of Library and Information Science*, *21*(1), 35–50. https://doi.org/10.22452/mjlis.vol21no1.3