

University of Nebraska - Lincoln

DigitalCommons@University of Nebraska - Lincoln

Library Philosophy and Practice (e-journal)

Libraries at University of Nebraska-Lincoln

March 2021

Measuring the Status of Library Management Systems: A Case of Higher Education Institutions in Lahore

Muhammad Naveed

Assistant Librarian, Lahore High Court Multan Bench

Nadeem Siddique

HoD Library, Lahore University of Management Sciences (LUMS)

Hafiz Muhammad Adil

*Lecturer, Deptt of Library & Information Science, Govt. Degree College (B) Bedian Road, Lahore,
hafizmuhammadadil1@gmail.com*

Follow this and additional works at: <https://digitalcommons.unl.edu/libphilprac>



Part of the [Library and Information Science Commons](#)

Naveed, Muhammad; Siddique, Nadeem; and Adil, Hafiz Muhammad, "Measuring the Status of Library Management Systems: A Case of Higher Education Institutions in Lahore" (2021). *Library Philosophy and Practice (e-journal)*. 5134.

<https://digitalcommons.unl.edu/libphilprac/5134>

Measuring the Status of Library Management Systems: A Case of Higher Education Institutions in Lahore

By

Muhammad Naveed

Assistant Librarian, Lahore High Court Multan Bench
m.naveed789@gmail.com

Nadeem Siddique

HoD Library, Lahore University of Management Sciences (LUMS)
nadeemsiddique@gmail.com

Hafiz Muhammad Adil

Lecturer: Department of Library & Information Science, Govt. Degree College, Bedian, Lahore
Hafizmuhammadadil1@gmail.com

Abstract

Purpose: The aim of this study was to measure the status of automation, training of staff and level of implementation towards library management systems in public and private university libraries in Lahore, Pakistan.

Design/methodology/approach: This study used a quantitative research approach. A Survey was carried out to collect data from the respondents. A structured research instrument was formulated after a review of the literature to collect data from the university libraries of Lahore city.

Results: The data analysis of this study revealed that the majority of the libraries are fully automated and only a few libraries are partially automated. Most of the libraries are satisfied with LIMS free based software and KOHA open source software, due to the availability of essential library software modules and facility of customization. The majority of the libraries' staff got training to use the library management system. A large number of libraries software has Cataloguing, Circulation, Membership, Reports, OPAC, Serials and Acquisition modules and only one library has a Mobile app.

Originality/value: The findings of this research might be helpful for libraries in the selection of standard library management systems for their housekeeping functions, evaluation and selection criteria of library software for Pakistani libraries and especially for the libraries of Lahore.

Keywords: Library Management System, Integrated Library Software, Integrated Library System, Library Software, Library Automation

Introduction

The information role is indispensable for the economic and social development of any society. The people who secure access to the required information and capable of using it in their required fields of life, make progress in every field of life in modern times. Information makes individuals and nations to make decisions accurately and decisively. The use of ICTs accelerated the speed of work and inferred better results. The arrival of ICTs decreased the fallibility of calculation and minimized the physical rate of work and fatigue. The provision of an online system of cataloging helped in copying the metadata and it decreased the cost and efforts (George, 2007).

Mahmood (1996) propounded his findings that ICTs have the ability to manage the vast amount of data speedily and accurately so the libraries should have utilized the ICTs in purchasing, classifying, cataloging, circulation of library materials and serial control. Selective Dissemination of Information (SDI) and Current Awareness Service (CAS) are being facilitated by the novelty of ICTs.

Libraries used different library management systems to automate their processes. From the past few years, library collection has changed to electronic, digital items and E-book collections. The regularly changing necessities of integrated library systems have created difficulties for library professionals and vendors to adapt to changing prerequisites (Kinner & Rigda, 2009). In the existence of these challenges, libraries are as yet utilizing outdated systems to supervise present-day collections (Yang, 2013).

Ideally, a library system ought to have the capacity to include, file, show, and inquiry Relational Database Service (RDS) fields however not all the current Integrated Library Systems (ILSs) are promptly made for this assignment. The management of electronic resources is very difficult for current ILS. To overcome these challenges, the vendors of ILS working on the new generation library catalogs in the form of discovery tools to facilitate the user for providing a single search interface. The next generation of library systems is Resource Description and Access (RDA) compatible. The most prominent features of this type of library system include clientless and cloud-based, role-based login and unified workflows, the knowledge base, electronic resource management, and license management. Libraries can include MARC fields for RDA information and in addition shows, record, and pursuit those fields. The new generation library systems are superior to old ILS and take some time to reach their prime (Yang, 2013).

An Integrated Library System supposed to use for facilitating libraries in running their operations more quickly and accurately and made the libraries to eliminate their backlogs, record maintenance and assisted in the generation of required reports (Bills, 2000). It has also improved and revolutionized the library process like acquisition, cataloging, circulation control, book reservation, online catalogs and many other services more efficient as compared to a manual system. Besides these, some other benefits include improved productivity, reduced staff, reduced cost of operation, improved control, improved speed, reduced errors, increase range and profundity of administrations (Kochtanek & Matthews, 2004).

In Pakistan, there is scant literature that measures the status of library management systems except for few studies which measure the status of automation in libraries. These studies don't uncover the present status of library software used in the libraries of Pakistan (Siddique, 2011). The varieties of software that are being utilized in the libraries of Pakistan are locally prepared

software, imported software, free and self-made software (Ramzan & Singh, 2009; Shafique & Mahmood, 2008).

Idrees (1995) conducted a study on the automation of the libraries in Lahore twenty-three years ago and prescribed the advancements of the standard services which could satiate the needs of libraries. A comparative study was conducted on the software being used in the libraries of Lahore (Shafique, 2004), almost thirteen years before and finds that most libraries purchased, developed and designed software without sharing their upright and deprived experience regarding software use. Libraries in Lahore were using diverse varieties of software packages. There was no defined mechanism for the selection and evaluation of the library automation software.

Shafi-Ullah (2009) carried out a study to measure the status of automation in university libraries of Islamabad. The findings of the study demonstrated that only one library was completely automated and was half automated or even equal to none. The libraries were, for the most part, concentrating on Cataloguing rather than focusing on other library activities. The investigation led by Siddique (2011), unfurl the automation status of the institutions of higher education in Pakistan. The findings indicated that most of the libraries using LIMS free based locally developed software in their libraries. Another study conducted by Asim (2017) in Punjab on the adoption of KOHA Integrated Library Management System and findings demonstrated that KOHA is the best software for the university libraries of Punjab.

The pertinent Pakistani literature has brought up numerous issues in automating the libraries. One of those issues was the absence of the ordinary software that could satiate the needs of the libraries. There was no typical directory confined for the selection of library software. Pakistani libraries differed in arrangements and dialects.

Internationally available software are unable to fulfill the needs of local libraries. A few libraries orchestrate to purchase costly software however they cannot maintain them because of their costly support and maintenance charges. Some individual efforts are done for said purpose but failed to satisfy the libraries. The vast majority of the endeavors have done in seclusion without following any principles. Some organizations attempted to give the arrangement however they failed. A few libraries procured proficient software developers for their libraries yet, in addition, could not get the achievement. The major issues in implementing the library automation system KOHA in libraries in Punjab were the scant knowledge of technical skills, knowledge of the operating system, problems of data conversion and migration, lack of expert manpower and customization according to the needs of the libraries (Asim, 2017).

Literature Review

There is scanty literature on the status of library software and very few studies have been conducted in this regard in Pakistan. Those studies which have been conducted on library software give a very minor overview of the importance of library automation and also propound the use of library automation to a limited region of the country. There is no literature that may give the current status of library automation in the country (Siddique & Mahmood, 2016).

Libraries in Pakistan adopted computers in the sixties of the previous century to perform the functions of libraries and started a unit for processing the data at PASTIC (Pakistan Scientific and Technological Information Center) in 1968 (Haider 1998; Ramzan and Singh 2009).

There were various software available and many are in multi-user network versions. Today's LMSs are based on a client-server architecture and facilitate access to other servers over the Internet. These systems allow accessing multiple sources from one multimedia interface.

Customized report generation, manipulating data and investigating various scenarios are possible in these LMS (Dempsey, 1996).

The importance of library software can be judged through the following statement of Mahmood (1995) that the software is the most vital ingredient of the library automation process. Without the library software, a library likes a human without the brain or library without material nor any professional. Use of library software means to perform the traditional library work (purchasing, classification, cataloging, circulation, serials control) by the integrated library systems.

Mahmood (1996) discussed the selection of the software, he highlighted that in foreign countries software can be selected with the help of directories and tools but in Pakistan, the scenario is diverse due to the non-availability of standard tool or directories for the selection of library software. In most cases, Pakistani libraries selected library automation software without taking any benefits from the experience of other libraries. He highlighted that the Library Schools were not prepared for their students to cope with these challenges. The main reason for this the non-existence of library automation subject in their syllabus and practical knowledge of automation.

Every library, regardless of the type and the size of its collection, benefits from automation. What is most evident about automation is that it improves library services and increases productivity, efficiency, and accuracy in performing a variety of library operations (Meghabghab, 1997).

Shafique and Mahmood (2008) while describing the selection of the software they said that before the selection of the software you must know about the product and to whom you are purchasing. The benefits of library software include staff reduction, cost reduction, productivity,

error reduction, improved control, speed, range of services, depth of services and access to available material (Kochtanek & Matthews, 2004).

The circumstances of library software in Pakistan cannot be pored with the developed countries of the world because in Pakistan the data of Pakistani Libraries are in different languages, the people are ignorant of the use of software and technology, lack of access to sufficient resources and institutionalization. There are also issues of piracy and lack of technical assistance from the side of the providers of the services in the practical use of library software in Pakistan (Siddique & Mahmood, 2014).

A variety of library software were developed and implemented with success in the developed countries but it is not working on the same lines in Pakistan. In Pakistan, there is no practice of choosing and using the software in libraries in Pakistan hence the foreign developed software are not suitable for use in Pakistani libraries. The libraries which are being automated are working individually and are not taking assistance and benefit from other libraries working in Pakistan. There is also a lack of technical experts and resource persons for this work in Pakistan and that problem can be solved through assistance from the library schools and professional associations which can train the library professionals in its use (Mahmood, 1996).

The related literature on library automation showed that there were very few studies were conducted in this regard in Lahore. Taj (1990) conducted a public library survey in the province of Punjab and reported that only three public libraries “Quaid-e-Azam, Lahore; Dyal Singh Trust Library, Lahore; and Jinnah public library, Gujranwala” were using the computer for automation. According to Anjum (1990), out of 15 medical libraries, six libraries have computers. Bilal (1993) conducted a study on the library automation of NESPAK Central Library and propounded the findings that "NESLIB" was using in-house created software. Haider (1998) found out that

software like Pak library software, LIMS, Pro, LAMP, Fox and INMAGIC were being used in the libraries of Lahore.

Shafique (2004) conducted a comparative study to measure the use of library software in Lahore. The researcher found out that the libraries in Lahore bought software without sharing their good or bad experiences with the software in the past. The researcher found out that there was no typical tool for the evaluation and selection of the library software. Furthermore, there was no updated literature related to the use of library software in Lahore.

Pakistan Library and Automation Group (PakLAG) has introduced LIMS. It is considered as an exceptional library management system established by young library experts and distribute free of cost to the librarian's community. LIMS was being utilized by a wide range of libraries of Pakistan as well as abroad. The specialists additionally gave the preparation by means of email, telephone and through visits in various urban areas and cities like Lahore, Karachi, Islamabad, and Dubai (Siddique, 2005).

According to the Pakistan Library Automation Group (2011c), PakLAG introduced multilingual open-source KOHA ILS a customized form to cater to the automation desires of Pakistani libraries. It provided an onscreen keyboard for the languages of Urdu, Sindhi and Pashto. The export facility of Urdu MARC records available for the Urdu language. A survey by Pakistan Library Automation Group revealed that in early 2007, 140 libraries throughout the world were using KOHA.

Mairaj and El-Hadi (2012) conducted a survey to measure the ICTs application in medical libraries of Lahore and revealed that out of 22 libraries 16 were computerized through various kinds of library software. In which nine libraries were automating their process with LIMS, four applying customized software and only one implemented MLIMS for their library routines.

Asim (2017) surveyed the main libraries of HEC recognized universities and DAIs using KOHA ILS and stated that adoption and usage of KOHA ILS in Pakistani libraries are gaining momentum. The exceptional features of KOHA made it popular in the librarian's community of Punjab.

Ramzan (2004) stated that standard library software, skilled human resources, cost of software, hardware and management attitude were the main problems in the process of library automation. He further revealed that in the existence of multiple library automation software, the development of in-house library automation application is just like a re-inventing the wheel. The administration demanded results within a few days and weeks that are not possible.

Shafique and Mahmood (2007) concluded that ample library software are being used in libraries of Lahore. Libraries select the software often without sharing or exchanging the problems and benefits with each other. Library professionals are normally not involved while selecting the software. There is a lack of coordination among the library professionals even the libraries using the same software are not coordinating with each other.

In his M.Phil thesis, Asim (2017) stated that lack of technical skills, data migration, lack of knowledge of the operating system, skilled manpower, and customization were the major challenges of implementation of KOHA.

Shafiq and Mahmood (2007) recommended that librarians conduct a survey before the selection of the software. An association of automated libraries should be created. Library associations and schools provide technical and practical training of the software to staff.

Shafique and Mahmood (2008) recommended that before the selection of the library software the librarians should arrange an assessment before the choice of software for their libraries. Automated libraries of Pakistan should form the group at the national level. Library

schools and PLA provide training regarding the use of library software. Software providers provide training and online help to minimize the problems of library software. Seminars/workshops conducted to find out the experience of library professionals regarding library software. The concept of consortium be introduced and the benefits of the consortium introduced through training and workshops. LIMS free based software should be improved as per foreign standards to meet the needs of the libraries. Foreign costly software should be provided to developing countries like Pakistan at minimum cost.

Siddique and Mahmood (2015) suggested that an exhaustive study ought to be directed to know the nearby needs of the libraries. Higher education institutions ought to be conceding an exceptional spending plan for the libraries to the securing, upkeep of the product and preparation of the staff. They additionally recommended that universal sellers ought to be urged to open their workplaces in Pakistan and give the sensible arrangement of the automation of Pakistani libraries, preparing and introduction in regards to the choice of reasonable library software accessible in the global market.

Asim (2017) in his M.Phil study recommended that the libraries of Pakistan having inadequate low library budget should adopt KOHA free and open-source software in their respective libraries.

Research Objectives

1. To measure the status of automation of the libraries of Lahore
2. To identify the library software being used in the libraries of Lahore
3. To survey the modules of the software being used in libraries of Lahore
4. To check the implementation level of the software being used in libraries of Lahore

Research Design

The quantitative research design based on the survey method was opted for this study. HEC recognized Forty-five public and private universities of Lahore city were chosen as the population of this study. The response obtained from forty-five (N=45) university libraries of Lahore.

A comprehensive instrument was developed to attain data from the respondent libraries. It was developed after reviewing the literature review, especially taking assistance from the instrument used in the study of Shafique (2004); Siddique (2011) and later on reviewed by the experts of library automation.

The instrument was sent to head librarians of public and private universities' of Lahore. The researcher briefed whenever needed. With relentless follow-up by the researcher in the means of email updates and SMS updates, telephonic calls and individual visits to a few libraries helped achieve response rate as 100 percent. Out of the 45, three libraries were not automated; due to this reason, these libraries were excluded from the data analysis. Collected data were analysed by using the Statistical Package for the Social Sciences version 19.

Data Analysis and Findings

Data were collected from the selected HEC recognized university libraries of Lahore. The findings are interpreted and presented here.

The survey identified that the participated libraries were academic, which include universities (29, 69%) and HEC degree awarding institutes (DAIs) (13, 31%) as tabulated in Table 1.

Table 1. *Type of Institutes Surveyed*

Institute	Frequency	Percentage %
University	29	69
DAIs	13	31
Total	42	100

The frequency distribution of the participated libraries showed that libraries (27, 64.3%) belonged to the private sector whereas libraries (15, 35.7%) from the public sector as shown in table 2.

Table 2. *Sector-wise Frequency Distribution of the Institutes (N=42)*

Sector	Frequency	Percentage%
Private	27	64.3
Public	15	35.7
Total	42	100

The participated libraries were asked to specify the automation status to recognize the actual situation of the automation. The majority of the libraries (33, 78.6%) responded that they had completely automated and only a few libraries (9, 21.4%) responded that they had partially automated.

Table 3. *Status of Libraries Automation*

Automation	Frequency	Percentage%
Yes	33	78.6
Partially automated	9	21.4
Total	42	100

The years in which the libraries started automation were divided into different categories. Six libraries (14.3%) started using automation from 1990 to 1996. Two libraries (4.8%) from 1997 to 2003, ten libraries (23.8%) between 2004 to 2010 and 24 libraries (57.1%) were started automation within 2011 and onward (Table 4).

Table 4. *Year in which the Library Started Automation*

Year	Frequency	Percentage%
Up to 1996	6	14.3
1997-2003	2	4.8

2004-2010	10	23.8
2011 onward	24	57.1
Total	42	100

According to the collected data, a variety of software are being utilized by the libraries located in Lahore. Out of which LIMS (19, 45.2%), KOHA (13, 31%), VIRTUA (2, 4.8%), LMS (2, 4.8%), MLIMS (1, 2.4%), Insignia (1, 2.4%), LIBXOL (1, 2.4%), WINISIS (1, 2.4%), Alice for Windows (1, 2.4%) and LAMP (1, 2.4%) were used in libraries of Lahore as tabulated in Table 5. These findings supported the findings of Siddique and Mahmood (2011) that a large number of libraries were utilizing locally developed Software.

Table 5. *Distinctive Classifications of Software Being Utilized the Libraries of Lahore*

Software	Frequency	Percentage%
LIMS	19	45.2
KOHA	13	31
VIRTUA	2	4.8
LMS	2	4.8
MLIMS	1	2.4
Insignia	1	2.4
LIBXOL	1	2.4
WINISIS	1	2.4
Alice for Windows	1	2.4
LAMP	1	2.4
Total	42	100

According to the collected data, a variety of software are being utilized by the libraries of Lahore. These are ordered as foreign, local and in-house created software. Of which 14 (33.3%) are Open Source, 12 (28.6%) are free, six (14.3%) are In-house developed, five (11.9%) are Off the Shelf (Imported), four (9.5%) are locally developed and one (1, 2.4%) is Cloud Based. These

findings supported the findings of Rafiq and Ameen (2009), the open-source software was more appropriate for the Pakistani condition, contrasted with off-the-shelf imported software and also supported the findings of Asim (2017) that main reasons of Open Source KOHA adoption were free availability, provision of Web OPAC, desirable features/functions, easy process of installation and popularity in library professionals.

Table 6. *Sort of Software Being Utilized by the Libraries of Lahore*

Software type	Frequency	Percentage%
Open Source	14	33.3
Free	12	28.6
In-house developed	6	14.3
Off the Shelf (Imported)	5	11.9
Locally Developed	4	9.5
Cloud-Based	1	2.4
Total	42	100

The participated libraries were asked either they have and technical support agreement with the vendor. In response, only a few libraries (6, 14.3%) responded in favor of the agreement and a majority of the libraries (36, 85.7%) responded in replying with no agreement with the vendor (Table 7).

Table 7. *Technical Support Agreement with Vendor*

Support agreement	Frequency	Percentage%
No	36	85.7
Yes	6	14.3
Total	42	100

The surveyed libraries were requested to mention the annual support charges paid to the vendor. In response, only a few libraries (6, 14.3%) responded in Yes and a majority of the libraries (36, 85.7%) responded in the form of No. support charges paid to the vendor (Table 4.8).

Table 8. *Annual Support Charges Paid to Vendor*

Support Charges	Frequency	Percentage%
No	36	85.7
Yes	6	14.3
Total	42	100

The participated libraries were asked to mention software modification. The only few libraries (6, 14.3%) responded that their software is modified from other software and a majority (36, 85.7%) responded to say their software is not modified from any other software (Table 9).

Table 9. *Frequency Distribution of Software Modification from other Software*

Modified	Frequency	Percentage%
No	36	85.7
Yes	6	14.3
Total	42	100

With a specific end goal to get data about in-house customization the respondents were accordingly gotten some information about in-house changes. Greater part (35, 83.3%) did not say any in-house changes. Only two (4.8%) reported that they add new modules, one (2.4%) reported that they customize OPAC and Four (9.5%) replied they customized their software according to their need (Table 4.10).

Table 10. *In-house Changes Made*

In-house changes	Frequency	Percentage%
No Change	35	83.3
Customized according to need	4	9.5
Added New Modules	2	4.8
OPAC Customization	1	2.4
Total	42	100

In order to get information about the budget for library software the participated libraries were requested to mention the budget availability for library software. Just a couple of libraries (6, 14.3%) announced the accessibility of isolated spending plans for library software and the greater part (36, 83.3%) guaranteed that they have no different spending plan for library software. These findings are in accordance with the discoveries of Siddique and Mahmood (2011) that a greater part of the libraries in Pakistan did not have any different spending plans for library software. These findings are also in line with the findings of Shafi-Ullah (2009) regarding the non-availability of the software budget.

Table 11. *Budget for Library Software*

Budget	Frequency	Percentage%
No	36	85.7
Yes	6	14.3
Total	42	100

The participated libraries were questioned about their staff training regarding the use of automation software. The majority of the libraries (31, 73.8%) responded that their staff got training to use the library management system remaining libraries (11, 26.2%) replied with answering No training provided to staff. The results of this study found quite similar to the findings of the study by Siddique and Mahmood (2011) as they also found that the majority of the participants had got training for their software and a modest number did not get any training to use the library software effectively.

Table 12. *Frequency distribution of library staff training regarding use of automation software*

Training of Staff	Frequency	Percentage%
Yes	31	73.8

No	11	26.2
Total	42	100

Frequency distribution of library collection showed that a large number of the libraries (30, 71.4%) had their accumulation up to 30,000. Five (11.9%) libraries had in the range of 30001-60000, Four (9.5%) libraries had in the range of 60001-90000, One (2.4%) had in the range between 90001-120000 and only two (4.8%) libraries had 150000 and above collection.

Table 13. *Total Collection Size*

Collection Range	Frequency	Percentage%
Up to 30,000	30	71.4
30,001-60,000	5	11.9
60,001-90,000	4	9.5
90,001-120,000	1	2.4
Above 150,000	2	4.8
Total	42	100

In order to collect the data pertaining to software modules from the LMS used in the libraries of Lahore. The respondents were gotten some information about the accessibility of the module in their library management system in the form of Yes and No. Out of 42 respondent libraries the majority of the libraries (42, 100%) responded with the availability of Cataloguing module, followed by Acquisition (31, 73.8%), Circulation (39, 92.9%), Membership(39, 92.9%), Serials (32, 76.2%), OPAC (33, 78.6%), Web OPAC (30, 71.4%), Reports (35, 83.3%), Course Reserves (20, 47.6%), Administration (31, 73.8%), Authority Files (22, 52.4%), Advanced/Boolean Search (27, 64.3%), Tools(12, 28.6%) and Mobile app (1, 2.4%) as mentioned in table 14.

Table 14. *Frequency Distribution of Available Modules*

Rank	Module	Frequency	Percentage%
------	--------	-----------	-------------

1	Cataloguing	42	100
2	Circulation	39	92.9
3	Membership	39	92.9
4	Reports	35	83.3
5	OPAC	33	78.6
6	Serials	32	76.2
7	Acquisition	31	73.8
8	Administration	31	73.8
9	Web OPAC	30	71.4
10	Advanced/Boolean Search	27	64.3
11	Authority Files	22	52.4
12	Course Reserves	20	47.6
13	Tools	13	31
14	Mobile App	1	2.4

In order to identify the implementation of software modules, the participated libraries were asked to mention which software modules were being used in their libraries. The Cataloguing module (40, 95.2%), followed by Circulation (35, 83.3%), Membership (35, 83.3%), Reports (32, 76.2%), OPAC (28, 66.7%), Web OPAC (25, 59.5%), Administration (24, 57.1%), Advanced/Boolean Search (23, 54.8%), Serials (19, 45.2%), Acquisition (18, 42.9%), Authority Files (16, 38.1%), Tools (12, 28.6%), Course Reserves (9, 21.4%) and Mobile app (1, 2.4%) implemented by libraries of Lahore. The frequency distribution mentioned in table 4.15.

Table 15. *Implementation Level of the Modules (N=42)*

Rank	Module	Frequency	Percentage%
1	Cataloguing	40	95.2
2	Circulation	35	83.3
3	Membership	35	83.3
4	Reports	32	76.2
5	OPAC	28	66.7
6	Web OPAC	25	59.5
7	Administration	24	57.1
8	Advanced/Boolean Search	23	54.8
9	Serials	19	45.2
10	Acquisition	18	42.9
11	Authority Files	16	38.1

12	Tools	12	28.6
13	Course Reserves	9	21.4
14	Mobile App	1	2.4

Conclusion and Recommendations

Having gone through the analysis of the study it is found out that most of the libraries in Lahore were automated and very few libraries were partially automated. The libraries of private universities were in better condition in automation than those of public universities. The diverse type of software was being used by the libraries in Lahore. Among them locally develop software LIMS is at rank one, KOHA and VIRTUA foreign develop software are at rank second and third respectively in order of implementation. Most of the libraries do not have a detached budget for the library automation software and struggle in the absence of a budget. Most of the libraries are using library management system without the help, maintenance and up-gradation arrangement. Most of the libraries have not modified their software from any other software, only a few libraries have modified the software. A large number of libraries have not done in-house changes in their software. Most of the libraries had not provided software training to their staff. A large number of libraries software has Cataloguing, Circulation, Membership, Reports, OPAC, Serials and Acquisition modules. The modules like Tools and Mobile App do not exist in most of the software packages. Most of the libraries have implemented Cataloguing, Circulation, Membership and Reports modules. Only a single library has implemented the Mobile App module. The majority of the libraries have not implemented the Acquisition and Serials module and doing their exercises manually.

The following recommendations are made for the improvement of library management systems in Lahore on the basis of findings of the study:

- Libraries of public sector institutions should conduct practical training courses regularly for working librarians to enhance their working capabilities.
- Mostly utilized and free of cost accessible software LIMS (Access based), ought to be updated to meet the standards like MARC. After up-gradation, LIMS ought to be picked as standard software for giving the facility of data sharing among the libraries of Lahore.
- Vendors of Foreign software should provide the software to developing countries on minimum cost so that the libraries of developing countries can better utilize foreign software.
- Modules like a Mobile app should be included in library management systems used in the libraries of Pakistan.
- Libraries should train their staff so that they can be able to implement acquisition, serials management module in their library and customize their library management system according to the needs of Libraries.
- A separate budget should be allocated to all libraries for the proper management of the software.
- PLA representative body of the librarians should prepare some master trainers who train the librarians so they would be able to run their own software successfully and also provide support to the libraries who are using LIMS and KOHA in their towns.

References

- Asim, M. (2017). *Librarians' Perceptions about Adoption and Uses of Koha Integrated Library System (ILS) in Punjab*. M.Phil thesis, Minhaj University Lahore.
- Bills, L. (2000). Technical services and integrated library systems. *Library Hi Tech*, 18(2), 144-150.
- Dempsey, L. (1996). Towards distributed library system. *Program*. 30(1): 1-22.
- Galhotra, M. K. (2008). *Information Technology in Library and Information Services*. EssEss Publications. New Delhi.
- George, G. E. (2007). The impact of modern information technology in the Caribbean: Exploring the challenges for the technical services division. C. Peltier-Davis & S. Renwick (Eds.), *Caribbean libraries in the 21st century: Changes, challenges, and choices*, 173-188.
- Idrees, H. (1995). *The library automation in Lahore*. Unpublished master's thesis, University of the Punjab, Lahore.
- Kinner, L., & Rigda, C. (2009). The integrated library system: From daring to dinosaur? *Journal of Library Administration*, 49(4), 401 - 417.
- Kochtanek, T. R., & Matthews J. R. (2004). *Library information to distributed information access solutions*. Westport: Libraries Unlimited.
- Kochtanek, T. R., & Matthews, J. R. (2004). *Library information systems: From library automation to distributed information access solutions*. Connecticut: Libraries Unlimited.
- Kumar, S. (2009). *Some Perspectives of Integrated Library System*. Rajat.
- Mahmood K. (1996). Status of library automation in Pakistan. *Library Review*, 45(6), 36-42.
- Mahmood, K. (1995). Library software in Pakistan. *Information Development*, 11(3), 165-167.

- Mairaj, M. I., & El-Hadi, W. M. (2012). Applications of information and communication technologies in libraries in Pakistan. *Journal of the Medical Library Association: JMLA*, 100(3), 218.
- Meghabghab, D. B. (1997). *Automating media centers and small libraries: A microcomputer-based approach*. Englewood, Colorado: Libraries Unlimited.
- Pakistan Library Automation Group. (2011c). *PakLAG Koha*. Retrieved from <http://paklag.org/koha.htm>
- Ramzan, M. (2004). Levels of information technology (IT) applications in Muslim world libraries. *The Electronic Library*, 22(3), 274-280.
- Ramzan, M. (2004a). Effect of IT utilization and knowledge on librarians' IT attitudes. *The Electronic Library*, 22(5), 440-447.
- Ramzan, M. (2004b). Levels of information technology (IT) applications in Muslim world libraries. *The Electronic Library*, 22(3), 274-280.
- Ramzan, M., & Singh, D. (2009). Status of information technology applications in Pakistani libraries. *The Electronic Library*, 27(4), 573-587.
- Riaz, B. A. (1993a). Library automation problems in Pakistan. In M. Fida (Ed.), *Challenges in Automating the Library Services* (pp. 27-34). Peshawar: Department of Library & Information Science, University of Peshawar.
- Riaz, B. A. (1993b). The PLA computer training centre, Lahore: A new era of library and information science education in Pakistan. In M Asghar. & A. H. Qarshi., & S. J. A. Rizvi (Eds.), *Hallmarks of Library and Information Services in Pakistan* (pp. 229-46), PULSAA: Lahore,

- Shafique, F. (2004). *Comparative study of the software used in the libraries of Lahore*. Master thesis, University of the Punjab, Lahore.
- Shafique, F. (2011). *Use of Integrated Library Software: A Survey*, VDM Verlag, Germany.
- Shafique, F., & Mahmood, K. (2007). "Librarians' opinions about library software: a survey of libraries in Lahore", *Electronic Library*, 25(6), pp. 766-777.
- Shafique, F., & Mahmood, K. (2008). Integrated library software: A survey of Lahore. *Library Hi Tech News*, 25(6), 6-13.
- Shafi-Ullah, F. (2009). *Library automation initiatives in developing countries: Case studies of the public sector universities in Islamabad (Pakistan)*. Master thesis, Thames Valley University, London.
- Siddique, N. (2005). Library Information Management System (LIMS). *Pak-LIS News*, 5(1). Retrieved from <http://www.paklag.org/news/newsarchive/News0501.htm#ed>
- Siddique, N. (2011). *An Appraisal of Library Software Used in Higher Education Institutions of Pakistan*. Doctoral dissertation, Department of Library and Information Science, University of the Punjab.
- Siddique, N., & Mahmood, K. (2014). Library software in Pakistan: A review of literature. *Library Review*, 63(3), 224-240.
- Siddique, N., & Mahmood, K. (2015). Status of library software in higher education institutions of Pakistan. *International Information & Library Review*, 47(3-4), 59-65.
- 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 & Information Science*, 21(1), 35-51.

Vasanth, N., & Mudhol, M. V. (2000). *Software Packages for Library Automation*. EssEss Publications.

Yang, S. (2013). From integrated library systems to library management services: time for change? *Library Hi Tech News*, 30(2), 1-8.