Exploring and investigating the status, implementation and problems /barriers in implementation of KOHA at libraries of Pakistan

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Keywords

Exploring, investigating, implementation, public libraries, Koha in Pakistan.

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Abstract: *The study of exploring and investigating the status, implementation and problems / barriers in implementation of KOHA software at libraries of Pakistan has been carried out in the eleven institute where KOHA is functional. These institute are selected based on purposive sampling procedure and data has been collected from 122 participants of the selected institutes. Three types of institutes have been observed i.e., universities, college and other public libraries. Based on the findings of the study it has been concluded that, the current status of library automation in Pakistan the key factors are cost of library automation system, display and screen and maintenance cost. Regarding the implementation of Koha in Pakistan key factors are founded librarians training on ILMS skills and latest information technology and ability of Koha OSS to save library budget. By observing the key problems/barriers involved in the implementation of Koha in Pakistani libraries. The network configuration, erratic power supply and lack of knowledge about operating system are founded the key problems/barriers involved in the implementation of Koha in Pakistani libraries.*

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Introduction

The Association of College and Research Libraries (ACRL) defined ICT as" let a human being to make use of computers, software programs, databases along with technologies to get a large range of academic and their own objectives". The Information and Communication Technology (ICT) move toward used in academic libraries try best to bring several applications including local/ broad area network applications, exchange of information and idea services, and databases, online journals, online approaches to catalogues, library databases, digital exchange of archives and automated circulation installation (Khan, et al., 2016).

The study of (Shafi-Ullah & Qutab, 2012) noted that computer systems have first used in information process in Pakistan Scientific and Technological Information Center in 1968. A small number of university libraries especially the Punjab and Sindh started library automation in 1980s. Information Technology used in many Pakistani libraries in the early hours of 1990s with the assistance of international associations. Libraries of Pakistan received global help in the shape of equipment, funds, publications, and optional services. Among these organizations, the popular were the United States Education Foundation (USEF), the Asia Foundation, and the United States Agency for International Development (USAID), the International Development Research Centre of Canada, UNESCO, the British Council, and the government of the Netherlands. Open-source software (OSS) is a software of computer for the source code is provide and sure different human rights usually assigned to copyright owners under a software license.

Corresponds to the open-source definition in the general area, this let user to operate, modify, and optimize the software programs, and rearranges it in customized or in original shape. Koha is full-featured MARC 21 system online web-based and available via Z39.50 ILS with SQL backend. Koha software was first originated in New Zealand in 2000 for the Horowhenua Library Trust. It is currently managed and controlled through a group of programs and software provider and technical staff of library from all over the world such as open-source software (OSS). Some features of Koha simple and clear user interface Web 2.0 promotions includes RSS tagging, custom search, RSS feeds, great multi-investor management, union catalogue etc. add to its value as an ILS. It is software deals with daily upgrades by its universal group of professions around the world (Shafi ullah & Qutab, 2014).

Koha received a number of awards which includes "Not for Profit section of the 2000 Interactive New Zealand award", "Innovation in Libraries" in 2000, "Les Trophées du Libre" in 2003 and "Use of IT in a Not-for-Profit

Organization Computer World Excellence Award" in 2004. Basic modules of Koha available in Koha ILS containing cataloguing, acquisition, circulation, patrons, serials, reports and etc. In these days the Koha ILS has turn out the librarian's first choice due the flexibility and library standards around the globe (Singh and Sanaman, 2012).

Literature

The Koha ILS is the first OSS and an extremely renowned and generally utilized software in the libraries of the world. Koha has broad features which made it well known among library experts. Large number of papers, articles and case studies accessible on this subject of interest by different journals. "Koha has advanced database features and additional specific characteristics. According to (Singh and Sanaman, 2012) the "full-text search features in the broadly used open-source library automation package Koha". These "coming contemporaries library systems maintain to fill the different requirements of libraries" (Anuradha, 2009).

The investigation of (Mahmood, K. 1999) praised on studying open source library management process advancement on their capabilities to achieve four fundamental components: interlibrary loan management, electronic materials management, traditional services and some basic management systems, an alerting system, such as safety and arithmetical reports. Several ILMS are completely web compatible and carry most technical features based on study of (Roy and Kumar, 2017). The study of (Ponelis, and Adoma, 2018), stated on the commercial library management systems and merits and demerits of open source (OS). The major Koha features and activities according to (Tajoli et al, 2011). Based on findings of (Ur. Rehman et al., 2012) the open source web-based OPACs of targeted university libraries of east and west to review the development made by libraries and level of changes in the developing world. Open source OPACs are new helpful to the ideal coming -generation catalogue than proprietary OPACs and Koha offer faceted routing (Yang and Hofmann, 2010). The Koha 3.0 library management system assists the large-ranging requirements of an active and quick-developing specialist library (Roy and Kumar, 2017). Koha's OPAC untied numerous better content features typical of Web 2.0, comprise RSS feeds to inform customers of new accomplishment in the interested region, tagging, and statement for search outcomes (Prescott and Conger, 1995). The forces concerned in the open source software maintain may contain: installation, exchange of services, training, configuration, hosting, ongoing support, and development of customs (Breeding, 2013). Even though devoted IT members are not present in many libraries in respect of the world, increased functionalities and improved manual could promote those libraries for the OSS adoption (Macan et al., 2013).

By observing problems during installation and implementation of Koha many challenges have been faced by the librarians during implementation of Koha. As Koha is Linux-based and in Pakistan a number of librarians do not have the appropriate knowledge about Linux operating system. The work of (Zico, 2009) stated a number of challenges faced by the librarians during the implementation of Koha at the BRAC University library, in which most common are lack of technical expertise and coordination and migration of data. Due to use of other software's in libraries before the adoption and implementation of Koha and migration of data is recorded the main the main challenge. The research study of (Walls, 2011) also reported the same challenges at the New York University of Health Sciences' library that data transformation and migration of patron records during the adoption and implementation of Koha at library. The findings of (Omeluzor et al., 2012) discussed while during the adoption and implementation of Koha the Koha ILS at Babcock University library, Nigeria. The main problems and challenges includes, insufficiency of technical manpower, less interest of management, no proper supervision and the irregular power supply during the adoption and implementation of Koha at library.

The starting of computer use in the libraries of Pakistan commenced from late 1990s. The first ever institute "Pakistan Scientific and Technological Information Center" used a computer for their union catalogue of scientific periodicals according to (Haider, 1998). IT-upgraded the administrations and day by day exercises of libraries in Pakistan. These days OSS particularly Koha has accumulated the most notoriety because of its free accessibility especially in developing nations, like Pakistan. According to (Rehman et al., 2016) in Pakistani libraries in 2006 first time Koha was used was. The Information and Communication Technology (ICT) changes the demands of library users. Every user of library wants quick information without wasting any time. In Pakistan, the implementation of OSS Koha in libraries is just at a first stage. The reason is that different libraries of Pakistan use different software. Very few of Pakistan's library utilize OSS Koha software. This research study is about the use of OSS Koha software in libraries of Pakistan. The focus of this study is to investigate the status, implementation, and challenges of Koha in libraries of Pakistan.

Research objectives

The study has the following objectives.

(1). Explore the status of library automation with reference to Koha (open source
    software).

(2). Investigating the key factors involved in implementation of Koha software in
    Pakistan.

(3). Investigating the problems /barriers in implementation of KOHA in
    Pakistan.

Research methodology

This research work used the quantitative approaches, as consists numeric data which was collected through a well design questionnaire. The data has been collected to know the perception of users regarding current status of library automation, key factors involved in implementation of Koha and problems/barriers in implementation of koha. The targeted population of the current research study is all the libraries of Pakistan where the OSS Koha software is used for Library Automation. During the study purposive sampling procedure was used for the selection of the sample and based on sampling procedure eleven libraries across Pakistan were selected where OSS Koha Software is utilized. From the selected libraries in the sample the data has been collected through the developed questionnaire from 122 librarians, assistant librarians and other related staff. The validity of questionnaire was measured through opinions of supervisor and other expert persons from the same filed while reliability of instrument were measured through Cronbach (1951) of pilot study of 20 respondents and it was observed with a value of 0.77, which suggests the instrument is reliable as measure that for which purpose it is intendent. The collected data were analyzed through statistical package for social science (SPSS) software version 25, software known for quantitative data analysis and Microsoft excel. Due to shortage of time and limited resource the study is consider to only these libraries of Pakistan where the Koha is implemented for the automation. An extensive literature has been studied and based on based on it the following research questions has been formulated.

*RQ*1. What is the current status of library automation in Pakistan?

*RQ*2. What are the key factors involved in implementation of Koha software?

*RQ*3. What are the key problems/barriers in implementation of koha?

Results and discussion

To answer the above stated research questions data has been collected from 122 participants librarians, assistant librarians and other related staff through questionnaire an analyzed using descriptive statistics. The statement in the questionnaire are based on five point Likert scale from Very poor to Excellent and from strongly disagreed to strongly agree. For the analysis of data SPSS and Microsoft Excel has been used.

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Libraries information

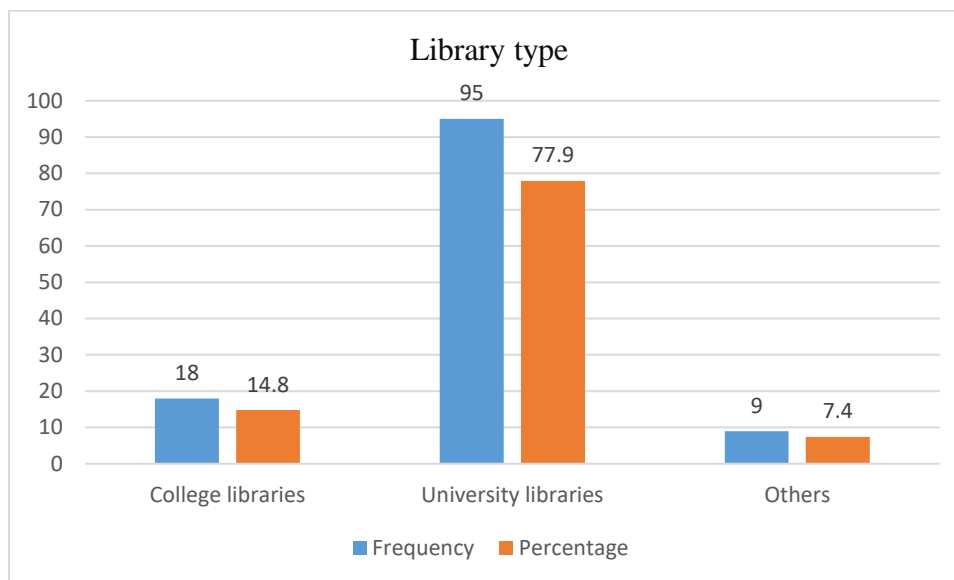**Figure 1.1** library type

Library type

Figure 1.1 describe the collected sample data based on library type. According to collected sample data, from total 122 participants of the study 18 with percentage of 14.8 are recorded from college libraries, 95 with percentage of 77.9 are recorded from university libraries and 9 with percentage of 7.4 are recorded from other libraries. This shows that, maximum number of participants of the sample data are recorded from university libraries followed by college and other libraries.

Figure 1.2 KOHA Installation year
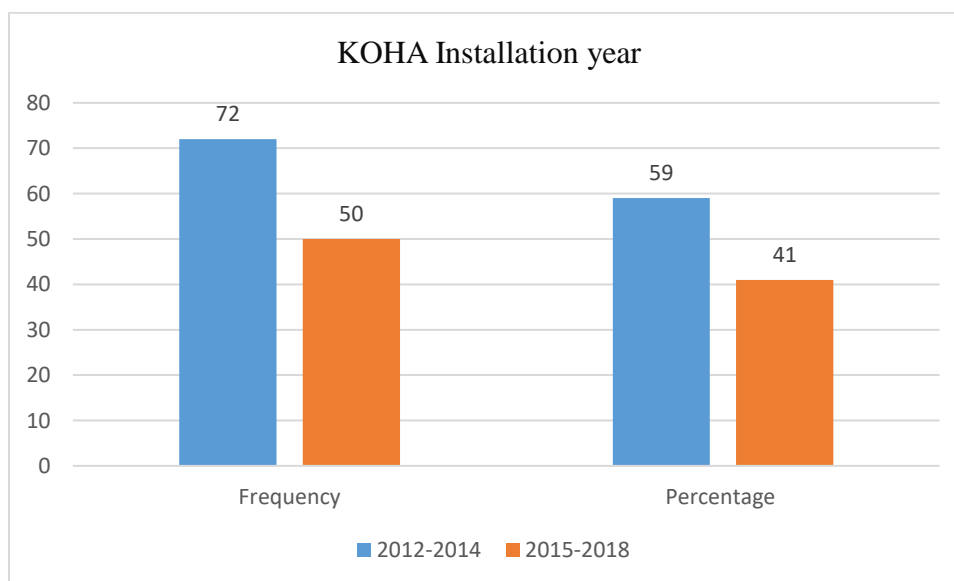
KOHA Installation year

Figure 1.2 illustrates in the collected sample data, 72 with percentage of 59.0 installed KOHA in libraries during 2012-2014 while the remaining 50(41.0%) installed in 2015-2018. This describe that, maximum number of libraries installed KOHA in the years ranging from 2012 to 2014.

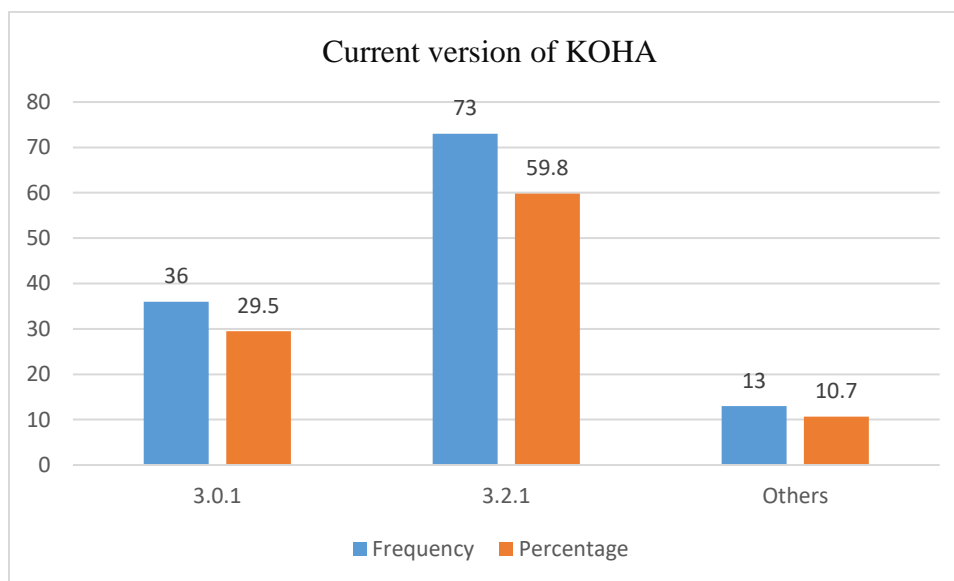*Figure 1.3* Current version of KOHA

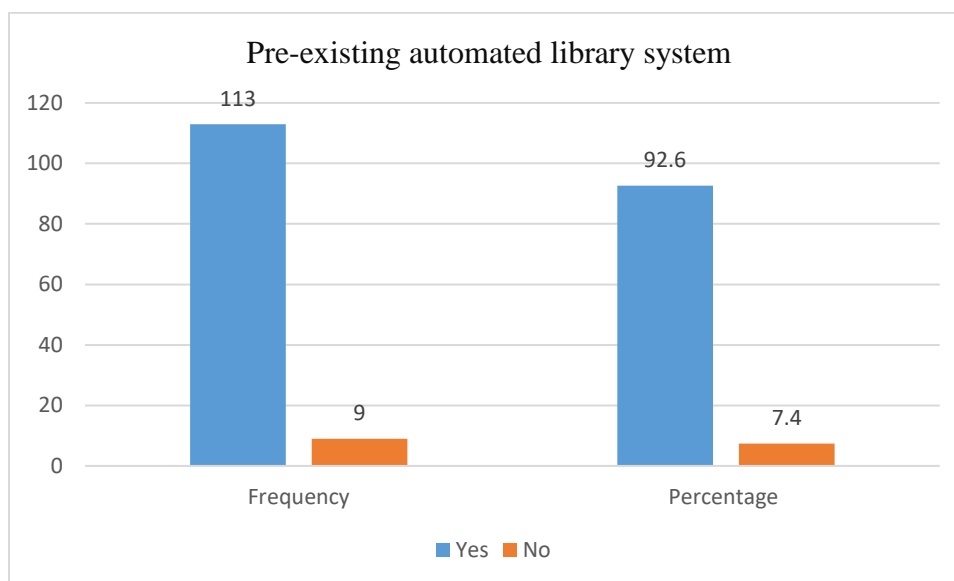Figure 1.3 shows in the collected sample data 36 with percentage of 29.5 using 3.0.1 KOHA version currently in libraries, 73(59.8%) using 3.2.1 version and 13(10.7%) using other version of KOHA. This describe that, maximum number of libraries using 3.2.1 version of KOHA followed by 3.0.1 version while minimum are using other available vision of KOHA.

Figure 1.4 Pre-existing automated library system

Figure 1.4 describe the collected sample data output regarding pre-existing automated library system. According to it 113 with percentage of 92.6 mentioned yes while 9(7.4%) mentioned no regarding pre-existing automated library system. This describe that, maximum number of libraries having pre-existing automated library system.
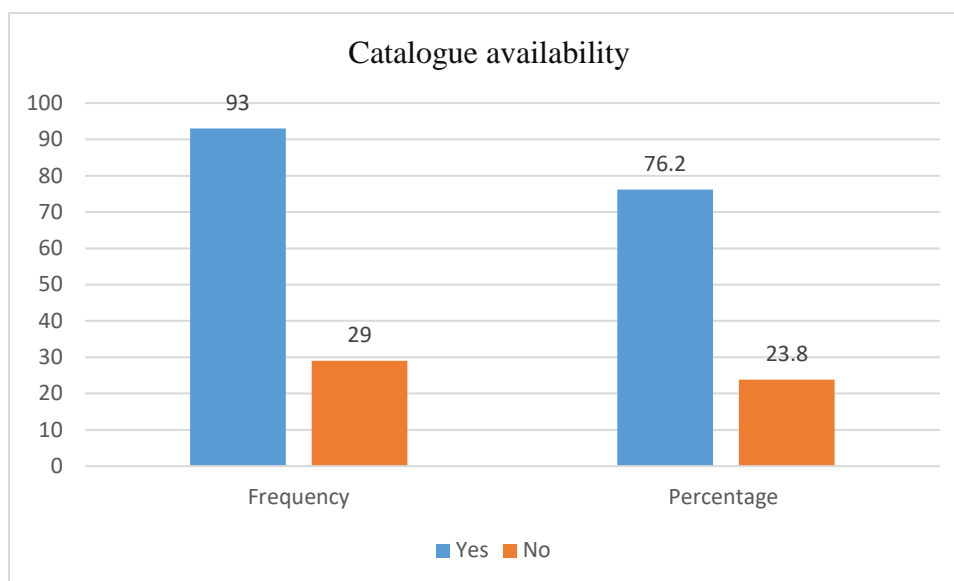
Figure 1.5 Catalogue availability

Figure 1.5 present the collected data output regarding former catalogue availability from total 122 responses, 93 with percentage of 76.2 mentioned yes catalogue available while 29(23.8%) mentioned no. This describe that, maximum number of libraries having former catalogue available as a web catalogue.

Reliability of data:

To further explore the collected sample according research questions it is important to measure the reliability of data. The reliability of collected sample data is measure through most reliable and usable statistical approach known as Cronbach Alpha statistics. A value closed to one illustrates data is reliable and can be used for further analysis and generalization of estimated results while a value closed to zero describe the data is not reliable. Table 1 confirms the collected sample data reliability through Cronbach Alpha statistic with a value of 0.87.

Table 1: Reliability of data

Cronbach Alpha statistic	N
0.87	40

Status of library automation in Pakistan:

*RQ*1. What is the current status of library automation in Pakistan?

The respondents were asked about the current status of library automation in Pakistan. Regarding cost of library automation system 54.9% respondents mentioned it excellent while 38.5% mentioned maintenance cost. According to respondents 73.8% are good with ease customization of Koha 63.1% are good with display and screen layouts of Koha. With user manuals available online 63.1% are average and 90.2% are good with ease cataloguing of library automation. Based on circulation 67.2% are average, 73.8% are poor with acquisition, 86.9% are good with reporting and 51.6% are very poor with support from Support Company.

Table 2: Status of library automation

Items	Very poor (%)	Poor (%)	Average (%)	Good (%)	Excellent (%)
Cost of system	0.0	4.9	12.3	27.9	54.9
Cost of maintenance	0.0	0.0	22.1	39.3	38.5
Ease of customization	0.0	0.0	21.3	73.8	4.9
Display and screen layouts	0.0	0.0	7.4	63.1	29.5
User manuals(online)	0.0	0.0	63.1	4.9	32
Ease of cataloguing	0.0	0.0	7.4	90.2	2.5
Circulation	0.0	13.9	67.2	18.9	0.0
Acquisition	4.9	73.8	21.3	0.0	0.0
Reporting	0.0	2.5	10.7	86.9	0.0
Support from support company	51.6	10.7	16.4	21.3	0.0

By observing the impact level of respondents' responses through mean value about the current status of library automation in Pakistan. The most impact is recorded for cost of library automation system with the highest mean value 4.32 and rank 1st followed by display and screen layout with rank 2nd and on 3rd rank maintenance cost. According to respondents on 4th rank ease cataloguing on 5th reporting are recorded while the lowest mean with higher rank 10th is recorded support from Support Company.

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Table 3: Impact level of status of library automation

Items	Mean	Std. Deviation	Mean Ranks
Cost of system	4.32	0.87	1
Cost of maintenance	4.16	0.76	3
Ease of customization	3.83	0.48	6
Display and screen layouts	4.22	0.56	2
User manuals(online)	3.68	0.92	7
Ease of cataloguing	3.95	0.31	4
Circulation	3.04	0.57	8
Acquisition	2.16	0.48	9
Reporting	3.84	0.42	5
Support from support company	2.07	1.24	10

Implementation of Koha:
*RQ*2. What are the key factors involved in implementation of Koha software?

The respondents were asked about the key factors involved in the implementation of Koha in Pakistani libraries. Regarding support from the administration 51.6% respondents agreed and strongly agreed. While 100% agreed and strongly agreed on librarians training and 81.2% agreed and strongly agreed on with statement that libraries organize seminars and workshop to train the library staff and 64.8% participants agreed and strongly agreed that Koha OSS training cost is cheap. Perception of respondents regarding data matching in different modules of Koha OSS 54.1% found agreed and strongly agreed with statement. With statements Koha OSS is a zero based budget and Koha OSS is able to save library budget 45.1% and 73% participants are noted agreed and strongly agreed respectively. Regarding latest information technology, flexibility in information search and easy maintenance of Koha 97.6%, 69.6% and 57.4% respondents are recorded agreed and strongly agreed respectively. While with statement Koha is easy to install 67.2% participants are noted agreed and strongly agreed.

Table 4: Implementation of Koha

Items	Strongly agreed (%)	Agreed (%)	Undecided (%)	Disagreed (%)	Strongly disagreed (%)
Support from administration	27.9	24.6	4.1	27.9	16.4
Librarians should be sent for training on ILMS	41.8	58.2	0	0	0
Library should organize seminars and workshops to train the library staff	53.3	27.9	18.9	0	0
KOHA OSS training cost is cheap	49.2	15.6	30.3	0	4.9
Data is easily matched with other modules of the koha OSS	32.8	21.3	19.7	7.4	18.9
Koha OSS is a zero based budget	23.8	21.3	33.6	21.3	0
Koha OSS is able to save library budget	16.4	56.6	18.9	8.2	0
Latest information technology	48.4	49.2	2.5	0	0
Flexibility information search	18	51.6	19.7	9.8	0.8
Koha OSS maintenance is easy	11.5	45.9	18.9	23	0.8
Easy to install	15.6	51.6	24.6	8.2	0

By observing the impact level of respondents' responses through mean value about the implementation of Koha in Pakistan. The lowest impact is recorded for support from administration with the highest mean value 2.95 and rank 1st followed by Koha OSS is a zero based budget with rank 2nd and on 3rd rank data is easily matched with other modules of the Koha OSS. According to respondents on 4th rank Koha OSS maintenance is easy and on 5th Koha OSS training cost is cheap is recorded while the highest impact with lowest mean and higher rank 11th is recorded librarians should be sent for training on ILMS skills.

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Table 5: Impact level of implementation of Koha

Items	Mean	Std. Deviation	Mean Ranks
Support from administration	2.95	1.59	1
Librarians should be sent for training on ILMS skills	1.41	0.49	11
Library should organize seminars and workshops to train the library staff	1.90	0.68	8
KOHA OSS training cost is cheap	2.29	0.90	5
Data is easily matched with other modules of the KOHA OSS	2.58	1.22	3
KOHA OSS is a zero based budget	2.76	1.37	2
KOHA OSS is able to save library budget	1.86	1.21	9
Latest information technology	1.53	0.54	10
Flexibility information search	1.99	1.28	6
KOHA OSS maintenance is easy	2.43	1.60	4
Easy to install	1.97	1.22	7

Problems/barriers in implementation of koha:

*RQ*3. What are the key problems/barriers in implementation of koha?

Regarding the key problems/barriers involved in the implementation of Koha in Pakistani libraries. Based on respondents responses 100.0% respondents agreed and strongly agreed that the erratic power supply is the key problem/barrier involved in the implementation of Koha in Pakistani libraries. While 81.1% participants noted agreed and strongly agreed with the stamen lack of knowledge about operating system and 93.4% agreed and strongly agreed with statement that network configuration. These three erratic power supply, lack of knowledge about operating system and network configuration are found key problems/barriers involved in the implementation of Koha in Pakistani libraries.

Table 6: Problems/barriers in implementation of koha

Items	Strongly agreed (%)	Agreed (%)	Undecided (%)	Disagreed (%)	Strongly disagreed (%)
Erratic power supply	63.1	36.9	0	0	0
Approval from the organization	4.9	0	12.3	49.2	33.6
Lack of motivation from the management/ authority	4.1	0	10.7	51.6	33.6
Lack of ICT skill	4.1	0	12.3	48.4	35.2
Lack of vendor support	4.1	0	10.7	41.8	43.4
Lack of knowledge about operating system (Linux, etc)	33.6	47.5	9	9.8	0
Incompatible systems requirement	4.1	0	11.5	43.4	41
Complex installation procedure of the Koha	18	5.7	74.6	1.6	0
Network configuration	39.3	54.1	6.6	0	0
Shortage of finance for the hardware requirements	13.9	12.3	13.1	15.6	45.1
Requirement of highly networked and integrated environment	33.6	44.3	8.2	9.8	4.1
Non availability of active voluntary support/ training	0	0	7.4	63.1	29.5
Lack of work shops	0.8	9	3.3	13.1	73.8
Upgrades of Koha versions	12.3	11.5	6.6	0	69.7

By observing the impact level of respondents' responses through mean value about the key problems/barriers involved in the implementation of Koha in Pakistani libraries. The lowest impact is recorded for lack of motivation from the management/ authority with the highest mean value 4.32 and rank 1st followed by approval from the organization and lack of ICT skill with rank 2nd and on 3rd rank incompatible systems requirement. According to respondents the highest impact with lowest mean and higher rank 13th is recorded for network configuration followed by erratic power supply with rank 12th and lack of knowledge about operating system on rank 11th.

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Table 7: Impact level of Problems/barriers in implementation of koha

Items	Mean	Std. Deviation	Mean Ranks
Erratic power supply	1.63	0.48	12
Approval from the organization	4.27	0.86	2
Lack of motivation from the management/ authority.	4.32	0.82	1
Lack of ICT skill	4.27	0.83	2
Lack of vendor support.	4.22	0.80	4
Lack of knowledge about operating system (Linux, etc)	1.90	1.20	11
Incompatible systems requirement	4.23	0.81	3
Complex installation procedure of the Koha	2.73	0.64	9
Network configuration	1.52	0.61	13
Shortage of finance for the hardware requirements.	3.37	1.25	7
Requirement of highly networked and integrated environment	2.01	1.25	10
Shortage of finance for the hardware requirements.	4.06	0.61	5
Lack of work shops	3.81	0.99	6
Upgrades of Koha versions	3.34	1.0855	8

Conclusion

Based on the findings of the study it has been concluded that, the current status of library automation in Pakistan the key factors are cost of library automation system, display and screen and maintenance cost. Regarding the implementation of Koha in Pakistan key factors are founded librarians training on ILMS skills and latest information technology and ability of Koha OSS to save library budget. By observing the key problems/barriers involved in the implementation of Koha in Pakistani libraries. The network configuration, erratic power supply and lack of knowledge about operating system are founded the key problems/barriers involved in the implementation of Koha in Pakistani libraries. To smoothly further enhance the development of KOHA to other institute of the country it is of most important to work on these issues first.

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