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Librarians' Perceptions About Adoption and Uses of The Integrated Library Software

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ABSTRACT

The main objective of this study was to investigate the factors that influenced the adoption of Koha-integrated library software by librarians in Sri Lankan universities and libraries and to examine the challenges that were encountered during the implementation process. Additionally, the study aimed to evaluate the librarians' perceptions of Koha's performance in Sri Lankan libraries. To gather data, a survey was conducted among a purposive sample of 75 university librarians in Sri Lanka. The results showed that librarians were attracted to Koha due to its multilingual support, desirable features, and functionality, popularity among professionals, and provision of the MARC 21 standard for cataloging. However, during the implementation process, librarians faced several challenges, including a lack of knowledge about operating systems, the complex process of migrating data from legacy systems, a lack of technical skills, and the need for a highly networked and integrated environment. Despite these challenges, the study found that librarians were generally satisfied with Koha's performance, particularly in the areas of circulation, cataloging, OPAC, and patron modules. The findings of this study can provide valuable insights for librarians who are considering implementing or using Koha in their libraries.

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1. INTRODUCTION

In today's world, information is essential to nearly every aspect of our lives. There are a wide variety of ways in which information can be conveyed: facts, statistics, photos, papers, sound or even a person's actions are all examples of information. In addition, IT has a substantial impact on the management of many firms. There is a greater ability to anticipate the effects of new technology on company operations thanks to the use of this tool. Libraries have been early adopters of information technology (IT). The library automation process relies heavily on software. In the same way that libraries without books or librarians are like computer systems devoid of software, it has been reported that Mahmood (1999) and Mairaj and El-Hadi (2012). Mahmood (1999) New Zealand's Horowhenua Library Trust commissioned Katipo Communications in 1999 to design Koha, an open-source integrated library system. Many languages have been translated into Koha's user interface, making it extremely flexible and adaptable. Many public, school, and special libraries around the world have adopted the software and added its features and functions because of its adaptability.

The Koha software is written in the Perl programming language and works on the Linux, UNIX, and Windows operating systems. The Koha modules must be served via an Apache Web server running on a MYSQL database for data storage. As a result of Koha's use of library standards and protocols like MARC 21 and Z39.50, it is compatible with a wide range of other systems and technologies and can be seamlessly integrated into existing processes and workflows. Koha only necessitates a minimal amount of hardware. It was stated by Egunjobi and Awoyemi (2012) that "there is no need to install any software on a user's machine" for Koha's "online public access catalog (OPAC)". Currently, Koha is maintained by a global network of software vendors and library technology experts. Upgrades are released daily by the software's global community, making it "living software" (Shafi-Ullah & Qutab, 2012).

Among the numerous honors bestowed upon it, according to Singh & Sanaman (2012), Koha has been the recipient of numerous honors and awards, including the "Not for Profit section of the 2000 Interactive New Zealand award," the "3 M award for innovation in libraries" in 2000, the "Les Trophées du Libre" for public organizations in 2003, and the "Use of IT in a Not for Profit Organization ComputerWorld Excellence Award" in 2004. The Koha ILS has all the basic modules, including acquisition, cataloging, patrons, circulation, serials, reports, and more. Because of its adaptability and provision of library standards, the Koha ILS is now the preferred choice of librarians all over the world.

When the first computer was installed at the State Engineering Corporation and the Petroleum Corporation in Sri Lanka in 1967, it marked the beginning of the computer age in Sri Lanka. However, over the next 11 years, computer growth was extremely slow. There were fewer than 20 computer installations in Sri Lanka at the end of 1978, according to a study conducted in 1981. Between 1978 and 1982, the number of computers in the United States increased. About 180 computers were installed in the country at the end of 1982, with 100 of those being microcomputers. Compared to 1978 when there were no microcomputers in Sri Lanka, this is a significant increase.

The first computer in Sri Lanka to process bibliographic data was purchased in 1983 for the Sri Lanka Scientific and Technical Information Centre (SLSTIC), a division of the National Science Foundation (NSF) (formerly Natural Resources, Energy and Science Authority - NARESA). The decision to purchase this computer had taken nearly three years because the decision makers had little knowledge of library automation and were reluctant to recognize that computers could be used to improve library activities. WANG MVP 2200 minicomputer with 64KB memory and 10 MB storage was recommended by the UNISIST Committee in

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October 1981. SLSTIC's computer, which had been installed since December 1982, was used for the first time at the beginning of the year. This was the first time a computer was installed in a library in Sri Lanka, making it a historical event.

Libraries in Sri Lanka have benefited from the use of information technology (IT). OSS, in particular, Koha, has become increasingly popular in recent years thanks to its free distribution, especially in developing countries like Sri Lanka.

According to the research gap identified, we identified the following research questions.

(i) What are the reasons for the adoption of the Koha ILS?
(ii) What are the problems encountered during the implementations of the Koha ILS?
(iii) What are the perceptions about the performance of the Koha modules?

This study aims to investigate academic librarian perceptions during the adoption and use of the Koha ILS in Sri Lankan universities. According to the research questions developed, this study intended to achieve the following objectives:

(i) to discover the reasons for the adoption of the Koha ILS;
(ii) to identify the problems encountered during the implementation of the Koha ILS; and
(iii) to record librarian perceptions about the performance of the Koha modules.

2. REVIEW OF LITERATURE

The Koha ILS was the first open-source library system and is widely used around the world. Because of its extensive functionality, librarians love Koha. According to a study, libraries were drawn to Koha because of its open-source code and user-friendliness. Library professionals were found to be satisfied with Koha's overall performance and its ability to be implemented in all types of libraries, according to a study. Data migration issues and network problems were the most common problems encountered while implementing Koha.

The Koha open-source library management system (LMS) was examined by Keast (2011) in Australian special libraries. Because of the Koha software, remote library users can now access the library from any location and save time and energy. The Koha software is the best option for library automation. Government College University's (GCU) Lahore library's implementation and data migration from the LMS to Koha were detailed by Khan et al. While the GCU libraries had more than 100,000 books in the Urdu language, the LMS software was non-MARC and non-Unicode, and it did not support the Urdu font. Because of this, the library staff decided to use the Koha ILS software in a conference call.

A study by Tella *et al*. (2017), examined how libraries in the Nigerian states of Kwara and Oyo use the Koha library software. These libraries' librarians were polled to see how they felt about Koha software, and the results were analyzed in this paper. The study also sought to identify the factors that influence the use or nonuse of Koha and the challenges that are encountered during the installation and use of Koha. According to the findings of the survey, a whopping 90% of participants had a favorable opinion of Koha's usability. Adopting Koha was plagued by power failure, poor management and lack of in-house expertise; inadequate infrastructure; and vendors' inadequacy.

According to Gireesh Kuma (2017), it was found that the Central University of Kerala Library was using a free, open-source integrated library management system. Open source software, particularly Koha, was used to highlight the strengths and potentials of the library's circulation system and to design a bibliographic database for the Central University of Kerala Library. According to the author, the main advantages of library automation through Koha are the reduction of job stress on staff and the enhancement of remote and timely information delivery to users.

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As part of their research Makori and Osebe, 2016, sought to determine the advantages and drawbacks of implementing Koha in an information management system in Kenya. They gathered information on respondents' opinions and experiences with Koha and examined how they felt about it on a personal level, as well as data on how it was used in the field and possible solutions. 95% of respondents said that the integration solution was the most important benefit. Economic opportunities, solid customer base, free use and distribution, compatibility with other solutions, compatibility with other solutions, technical and online support, global access to information, and organization of knowledge were also cited as advantages of the product. Lack of shared vision, lack of adequate resources, lack of knowledge, skills, and competencies, lack of leadership, management issues, institutional and physical issues, and resistance to change are some of the major problems identified in the study. An open-source library management system has been adopted and used in Indian libraries. Koha software adoption and user perceptions are discussed in this paper, as well as the level of satisfaction of library professionals with different Koha modules. The reasons for moving to Koha and the challenges encountered during the implementation of Koha have been examined in depth. 40% of libraries cited technical issues as the primary reason for switching to Koha, according to the research. These studies show that Kerala, Maharashtra, Karnataka, and Tamil Nadu have the most Koha users. Migration of data, network issues, employee resistance, and organizational approval were the major roadblocks to implementing Koha. As a major factor in South India's rapid adoption of Koha, a new study has found that it is supported by a strong community, an active development team, and a wide range of commercial support options.

Getting Koha up and running in the libraries proved to be a difficult task. Although Koha runs on Linux, many librarians aren't familiar with the operating system. The implementation of Koha at the BRAC University library was hampered by a lack of technical expertise, lack of coordination, and data migration (see http://dspace.bracu.ac.bd/xmlui/handle/10361/755). Data migration was a major issue for some libraries because they were already running other software before Koha was implemented. Walls, 2011 reported that the main challenges encountered during the implementation of Koha at the New York University of Health Sciences library were data conversion and migration of patron records. During the implementation of the Koha ILS at Babcock University Library in Nigeria, Omeluzor *et al.* (2012) discussed the difficulties they encountered due to lack of supervision, lack of motivation from management, and erratic power supply. Pakistan's legislative assembly libraries were the subject of a case study by Shafi-Ullah and Qutab (2012), who documented the process of moving data from a library automation management program to Koha. Many of these issues stemmed from a lack of funding and staff training, as well as a lack of interest from professional associations or groups, as well as librarians' reluctance to adopt new technologies. Koha's impact on Kenyan information management organizations was examined by Makori and Osebe (2016). As a result of their research, Koha was able to provide these organizations with more long-term financial solutions. In terms of providing the right information at the right time, Koha had a positive impact on their organizations. At the Northern Marianas College library, Todd, 2017 outlined the process of migrating data from the Millennium ILS to Koha. There was a lack of prior training, minimal IT support, a shortage of skilled workers, and no support from the company, among the difficulties he encountered during data migration, according to him. When the project was completed in two months, it was because there was not enough experienced staff to complete it.

On a global scale, thorough investigations on the Koha ILS have been carried out, and the majority. In Sri Lanka, only one research has been carried out on this Koha ILS. It elaborates

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on the data migration process from Winisis to Koha and explains the methods and steps of the data migration (see http://ir.lib.seu.ac.lk/handle/123456789/1361). This is a descriptive paper of a case study conducted at the South-Eastern University of Sri Lanka. This study investigates the reasons Sri Lankan librarians chose Koha and the challenges that cropped up when Koha was put into use. This study would be beneficial to librarians who want to use Koha in their libraries. It will also close a gap in the literature by presenting the perspectives and experiences of librarians who have used Koha in Sri Lankan universities.

3. METHOD

The study's intended audience consists of the librarians (155) employed by Sri Lanka's public universities and other public libraries. There were 75 people from state university libraries and five from other public libraries who participated in the survey, which was conducted online. As a result, the survey had a response rate of 0.5161.

3.1. Conceptual Framework

The conceptual diagrams presented below have been developed based on the literature (**Figure 1**). According to **Figure 1**, the Perceptions of librarians about the performances of Koha can be explained by the above-mentioned independent variables. Through the study, it is going to evaluate the Perceptions of librarians about the performances of Koha in Sri Lankan Libraries. The information was gathered from the intended audience via a survey (more than 50 respondents). The lack of a standardized instrument prompted the creation of a questionnaire based on the research conducted. The questionnaire incorporated input from a variety of experts. Cronbach's alpha reliability analysis test was used on all relevant sections of the questionnaire to ensure the questionnaire's validity. Average correlation coefficients were found to be 0.861%, according to the Cronbach's alpha coefficient. Microsoft Forms was used to create a standardized survey that was then sent out via e-mail to participants. To collect data from respondents who were unable to provide their responses through Microsoft Forms, the questionnaire was also prepared in Microsoft Word format.

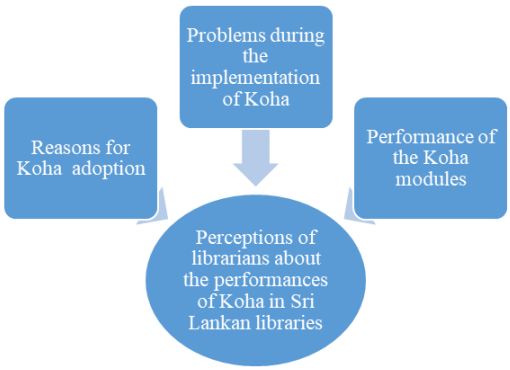

Figure 1. Conceptual framework.

4. RESULTS AND DISCUSSION

Koha was widely adopted by libraries between 2015 and 2017, and the majority of responses had less than a year of experience with the system. For the most part, libraries were running Ubuntu as their operating system of choice. There were 53.33% of respondents involved in the installation process, and 57.33% of respondents were never involved in the data migration process from their legacy system to Koha. 82.66% of librarians said their libraries were already using another software before switching to Koha.

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4.1. Demographics Variables

More than half of those surveyed were men, 46 (61.33%) of whom had a master's degree in library and information science, according to **Table 1**. (LIS). The majority of respondents were between the ages of 26 and 30 (34.66%, followed by 20 (26.67%) who were between the ages of 40 and over. According to the findings, 72 (96%) of the respondents were from public sector universities, while only three (0.3%) were from private sector institutions 4%.

Table 1. Demographics data.

Variables	Items	Frequency	(%)
Gender	Male	46	61.33
	Female	29	38.67
Qualification	Master's degree	48	64
	Bachelor's degree	16	21.33
	M.Phil	11	14.67
Age	26-30 years	26	34.66
	Over 40 years	20	26.67
	36-40 years	13	17.33
	31-35 years	09	12
	20-25 yeras	07	9.34
Type of institute	Public	72	96
	Private	03	4

4.2. Reasons for Koha's Adoption

A five-point Likert scale was used to gauge librarians' thoughts on the pros and cons of switching to Koha. **Table 2** shows the average scores of the opinions regarding the reasons for the adoption of Koha. Nine of the statements had a mean value greater than or equal to 4.00, while one statement had a mean value less than or equal to 3.96. Many libraries have chosen to use the Koha ILS because of its ability to support multiple languages (mean = 4.47, SD = 0.577, SE= 0.067), the availability of desirable features/functionality (mean = 4.25, SD = 0.639, SE= 0.074), and the popularity of the Koha ILS among the profession's community (mean = 4.25, SD = 0.595, SE= 0.069).

Table 2. Reasons for Koha adoption.

Variables	Mean	SD	SE	Sig.
Koha provides multilingual support	4.47	0.577	0.067	0.000
Provision of desirable features/functionality	4.25	0.639	0.074	0.000
The popularity of the Koha ILS among the profession's community	4.25	0.595	0.069	0.000
Koha provides MARC 21 standard for cataloging	4.17	0.665	0.077	0.000
The economic cost of implementation and maintenance	4.08	0.610	0.070	0.000
Insufficient features and the non-availability of library standards in the legacy system	4.07	0.949	0.110	0.000
Koha provides a search facility for copy cataloging through Z39.50	4.07	0.811	0.094	0.000
Availability of Library 2.0 features	4.05	0.613	0.071	0.000
Easy installation process on the Linux operating system	4.00	0.854	0.099	0.000
Availability of the web Online Public Access Catalog (OPAC)	3.96	0.725	0.084	0.000

In Paine College Collins-Callaway Library, Dennison and Lewis described how the Koha Integrate library management system was implemented. Increases in annual license and maintenance contract costs, budget constraints, the high cost of upgrading existing proprietary software, and employee dissatisfaction were all cited as major reasons for

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switching to Koha in this paper. Apart from cost and functionality, another reason why Koha ILS appeals to libraries is its underlying philosophy of open source and open access that are philosophically linked to intellectual freedom, which is ultimately the mission of libraries (Madhusudhan & Singh, 2016).

4.3. Problems During the Implementation of Koha

The findings shown in **Table 3** indicated that all the statements unanimously received a mean > 3.00. Librarians faced problems during the implementation of the Koha software including a lack of knowledge about the operating system (mean = 3.59, SD = 1.140, SE = 0.132), a complex procedure of data migration from the legacy system (mean = 3.53, SD = 0.723, SE = 0.083), lack of technical skills (mean = 3.35, SD = 1.020, SE = 0.118), requirement of highly networked and integrated environment (mean = 3.21, SD = 1.031, SE = 0.119) and a shortage of skilled manpower to install and maintain the software (mean = 3.17, SD = 1.005, SE = 0.116).

Table 3. Problems during the implementation of Koha.

Variables	Mean	SD	SE	Sig.
Lack of knowledge about the operating system (Linux, etc)	3.59	1.140	0.132	0.000
Complex procedure of data migration from the legacy system	3.53	0.723	0.083	0.000
Lack of technical skills	3.35	1.020	0.118	0.000
The requirement for a highly networked and integrated environment	3.21	1.031	0.119	0.000
Shortage of skilled manpower to install and maintain the software	3.17	1.005	0.116	0.000
Lack of motivation from the management/ authority	3.16	1.027	0.119	0.000

For example, when the library requested new functions in its library system to better serve its students and faculty, the supplier either did not respond or did not respond at all (see http://dl.lib.uom.lk/handle/123/11528). This older version of the library system does not include many of the new features that are available in today's library systems. A new LMS with advanced features was therefore purchased by the library to meet the needs of today's technologically advanced library users. The installation and maintenance of Koha is difficult for librarians because of the complicated procedure. Using community resources to get help with Koha is completely free. Libraries (91.18%) who prefer to maintain Koha without the assistance of commercial service providers benefit greatly from detailed user manuals, installation procedures, data migration assistance, active discussion forums, and blogs. It was also determined that the reasons for moving to Koha and the challenges encountered during the implementation of Koha were thoroughly examined. 40% of libraries cited technical issues as the primary reason for switching to Koha, according to the research.

4.4. Performance of the Koha Modules

The results in **Table 4** showed that six modules of Koha received a mean score > 3.00. The librarians' highly rated modules included circulation (mean = 3.80, SD = 1.000, SE = 0.115), cataloguing (mean = 3.75, SD = 1.285, SE = 0.148), OPAC (mean = 3.37, SD = 0.983, SE = 0.114) and patron (mean = 3.19, SD = 0.926, SE = 0.107). The modules of acquisition and serials received less mean as compared to the other modules.

Kumar and Jasimudeen mention that 42.86% of respondents thought that the modules they needed were readily available, which is a high rating. Libraries can tailor every aspect of Koha to their specific needs. Most users (39.29%) rated Koha's ability to be customized as exceptional. Customizing the features of Koha does not necessitate knowledge of programming. On the subject of "Koha awareness among library professionals in Ernakulum District," Jose conducted a survey. The author looked at librarians' attitudes toward Koha, its

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features, its architecture, and the various Koha modules. Library professionals were found to be satisfied with Koha's overall performance and its ability to be implemented in all types of libraries, according to a study. Data migration issues and network problems were the most common problems encountered while implementing Koha.

Table 4. Performance of the Koha modules.

Variables	Mean	SD	SE	Sig.
Circulation module	3.80	1.000	0.115	0.000
Cataloguing module	3.75	1.285	0.148	0.000
OPAC	3.37	0.983	0.114	0.000
Patron module	3.19	0.926	0.107	0.000
Acquisition module	3.12	1.102	0.127	0.000
Serials module	3.00	1.000	0.115	0.000

4.5. Discussion

The study's goal was to get a sense of how academic librarians in Sri Lanka feel about Koha's adoption and use. To get the most out of their libraries, librarians are looking for software that adheres to these standards. MARC 21 and Z39.50 make cataloging easier and faster for librarians. Users can check the status of their library books from the comfort of their own homes or other locations thanks to the Web OPAC. Furthermore, due to tight budgets, the majority of Sri Lankan libraries are unable to purchase commercial software. Given that Koha complies with all of the aforementioned requirements, Sri Lankan librarians favor it and are putting it into practice in their institutions.

According to the findings of this study, it is identified that Koha provides multilingual support and provision of desirable features/functionality. Previous studies found that the lack of library standards in proprietary legacy systems and the free availability of Koha were the main reasons for switching to Koha. According to Khan *et al*. (2016), the Government College University libraries in Lahore adopted Koha because of the software's multilingual support.

The findings of the study reveal that there were many difficulties during implementation, including a lack of technical skills, a lack of knowledge about the Linux OS, a shortage of skilled manpower, slow internet speeds, approval from the organization, and complex procedures of data migration. Due to a lack of educational resources, Sri Lankan librarians are having difficulty learning about Koha. According to Jamogha *et al*. (2021a), one of the most significant challenges associated with utilizing Koha was that library workers did not receive sufficient training. The majority of librarians are unable to participate in training workshops on Koha because of their busy work schedules and the cost of attending these workshops. Workshops typically last two to three days, which is not enough time to become proficient in Koha. According to Jamogha *et al*., (2021b), a big problem with using Koha was that library staff didn't get enough training on how to use it. Therefore, it was suggested that there should be regular training on how to use Koha and that the management of libraries should make and carry out strategic decisions that would help achieve the useful goals behind Koha. Further, Khan and Ayesha (2021) stated that to handle the bibliographic data of library materials, free and open-source software is frequently employed in academic libraries. In Pakistani university libraries, Koha is the most popular software for automating the libraries, however, other programs are utilized in addition to Koha.

As part of this study, academic librarians expressed their satisfaction with the performance of the Koha cataloging and circulation modules as well as their concerns with the acquisition and serials modules. When asked about their library's software budget, the librarians were

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apprehensive and reluctant to divulge any details. During workshops, it was also noticed that the resource person only briefly discussed both modules. To turn the current trends around, Sri Lankan librarians need to get better aware of the budgets of their respective libraries and learn the essential skills in the modules in question.

5. CONCLUSION

Koha's adoption was prompted by many factors, including its support for multiple languages, availability of desired features and functionalities, popularity among professionals of the Koha ILS, availability of the MARC 21 standard for cataloging, low implementation and maintenance costs, and a lack of features and library standards in the legacy system. There was a lack of understanding of operating systems (Linux, Mac OS, etc.), complexity in the data migration process from the legacy system, technical skills shortage, need for a highly connected and integrated environment, and lack of skilled personnel to install and maintain the software as major obstacles during the implementation of Koha, as revealed by the study.

According to the findings, Koha has all of the necessary features and functions, but academic librarians must learn more about Linux's installation process, data migration, and how to utilize Koha's modules. The findings of this study lead to the following recommendations:

(i) There should be enough money to pay for repairs and ongoing maintenance of Koha.
(ii) Internet should be provided uninterruptedly.
(iii) Library professional associations should arrange workshops, seminars, and short courses on Koha regularly and at the lowest fee possible and should encourage librarians to attend.
(iv) Koha ought to be incorporated into the curriculums of library and information science schools offering several levels of degrees if there is even a remote possibility of its being implemented.
(v) The volunteers ought to establish online tutorials as well as social media pages where users of any level can discuss any issues they have encountered with Koha.
(vi) There are a lot of librarians who are unaware of the Koha manual. They should make sure to read the handbook thoroughly to use Koha effectively.
(vii) Regular users of Koha should upgrade to the newest version of Koha so that they can benefit from the new features added by the Koha management team.

6. AUTHORS' NOTE

The authors declare that there is no conflict of interest regarding the publication of this article. The authors confirmed that the paper was free of plagiarism.

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