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# Implementing the Koha integrated library system at the Independent University, Bangladesh

## A practical experience

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### Abstract

**Purpose** – The purpose of this paper is to explain how the author carried out the implementation of the Koha open-source integrated library system (ILS) at the Independent University Bangladesh (IUB) Library, stated how much easy it is to implement Koha in a library and encouraged library professionals to implement Koha in their libraries.

**Design/methodology/approach** – The paper describes the author's practical experiences regarding implementation of the Koha open-source ILS.

**Findings** – Koha has those functionalities which can fulfill the library automation need of the IUB Library. That is why Koha is selected. Other librarians can easily implement Koha in their libraries.

**Practical implications** – This paper will help librarians to implement Koha in a practical way to their libraries. The author implemented Koha at the IUB Library within three months, and the author used migrated data from Computerized Documentation System/Integrated Set of Information System to MARC-21 for books and made new MARC-21 records for movies.

**Originality/value** – The author is the youngest library professional who implemented Koha at a private university library in Bangladesh. This will influence librarians to learn Koha and implement it in their libraries.

**Keywords** Library automation, Bangladesh, IUB Library, Koha, Open-source ILS

**Paper type** Technical paper

### Introduction

After Bangladesh was freed in 1971, there were various challenges to overcome. One of the challenges for librarians was keeping up with the international standards in the field of library and information science. It is well-known that without libraries, a nation cannot develop itself. Thus, many librarians in Bangladesh are working to bring their libraries up to international standards. The paper reports on a successful implementation of the Koha integrated library system (ILS) at the Independent University Bangladesh (IUB) Library. The term "integrated library system" refers to having all library functions under one system and Koha is one such ILS. By using the Koha ILS, librarians can manage all library functions, such as acquisition, cataloguing, circulation, serials control, online public access catalogues (OPAC), patron management and reports. This paper is unique in that the Koha ILS implementation was carried out without the help of any information technology professionals.



Koha is an open-source ILS. The main features of open-source software are that it is free and the source code is available for all to use. Anyone can edit and develop the source code. Koha also has Library 2.0 features. That is why Bangladeshi librarians are interested in using Koha ILS in their libraries, but they are facing some difficulties in implementing it. For example, questions about the installation of Koha on Linux servers, configuring Koha and especially cataloguing with Koha are common issues. Cataloguing questions are frequent, as there is no institution in Bangladesh where librarians can take lessons about MARC 21, machine-readable catalogue records and full-featured ILS. Nowadays, open-source options are becoming popular in many countries. Ribeiro (2007) noted that Asian governments believe that open-source software will help increase technological innovations and functioning to boost the economy. At present, there are about ten academic libraries using Koha in Bangladesh, but there is no public library using Koha yet. Day by day, interest is increasing regarding Koha and other library technologies among librarians in Bangladesh.

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### Independent University Bangladesh library

IUB is one of the top private universities in Bangladesh and was established in 1993. A second campus was established in Chittagong in 1999, making IUB the first private university in Bangladesh to extend its teaching facilities to the port city of the country (IUB, 2011). There are six schools in IUB: the School of Business, the School of Engineering and Computer Science, the School of Environmental Science and Management, the School of Liberal Arts and Social Sciences, the School of Public Health and the School of Life Science. These schools offer undergraduate and master's programmes in different subjects. The Cybermetrics Lab listed the IUB in their ranking of the top 100 universities (2008). It was first among all private universities, third among all universities after Bangladesh University of Engineering and Technology (BUET) and Dhaka University (DU) for Bangladesh and in the 75th position on the Indian subcontinent (Cybermetrics Lab, 2008). IUB has collaborative arrangements for research, faculty and student exchange, as well as curriculum development, with a variety of universities and organizations, including McMaster University, Hamilton, Canada; Harvard; University of Colorado at Boulder; Brown University; the Higher Education Consortium of Urban Affairs (HECUA) in Minnesota; Middlesex University in the UK; Pokhara University in Nepal; and Can Tho University in Vietnam. Additionally, IUB has memberships in a number of international academic associations, such as the American Association of University Administrators, Association of Universities of Asia and the Pacific, the International Association of University Presidents and the International Association of Universities (IUB, 2011).

The IUB Library provides a gateway for students, faculties and staff to access information. The library has nearly 30,000 book volumes, and subscribes to more than 100 journals and periodicals. There is online access to Emerald, JSTOR, Oxford University Press journals, Agora, Hinari, IEEE, WileyIS, EBSCOhost, Springer, CJ, OARE, ProQuest, *Harvard Business Review*, PMUSE, Taylor & Francis e-books and INASP (International Network for the Availability of Scientific Publications), as well as other, more minor subscriptions. After the implementation of Koha, staff use Koha ILS and users are getting ILS facilities. The library is also using a Dspace institutional

repository to fulfill the needs of digital preservation and dissemination. The IUB Library has a membership with the International Federation of Library Associations and Institutions.

### Why Koha?

Koha is one of the most popular open-source ILSs in the world. Koha began back in 1999, when a local library in the Horowhenua district, on the north island of New Zealand, was faced with a Y2K problem with its existing library system. Because that system was proprietary, there wasn't anything the library could do to correct the problem. Thus, the library management began to look for open-source alternatives. Remarkably, when no suitable alternatives presented themselves after a Request for Proposal, they decided to start work on Koha. The code was released under a General Public License (GPL) in 2000 (Katipo Communications, 2010). The name chosen for the product was "Koha", which is a Maōri word with a complex meaning having to do with gifts brought by visitors (Moody, 2011). Koha is a full-featured ILS with comprehensive modules for acquisition, cataloguing, circulation, serials control, patron management, reporting, OPAC, branch relationships and much more (Open Source, ILS, 2012). The further development of Koha depends on various types of libraries, organizations, volunteers and support vendors all around the world. Koha is also a web-based ILS which can provide additional advantages.

The term ILS is interchangeable with integrated library management system (ILMS). When a library uses an ILMS that means all library functions are in a combined system. Deddens (2002), p. 1 defines ILMS as a:

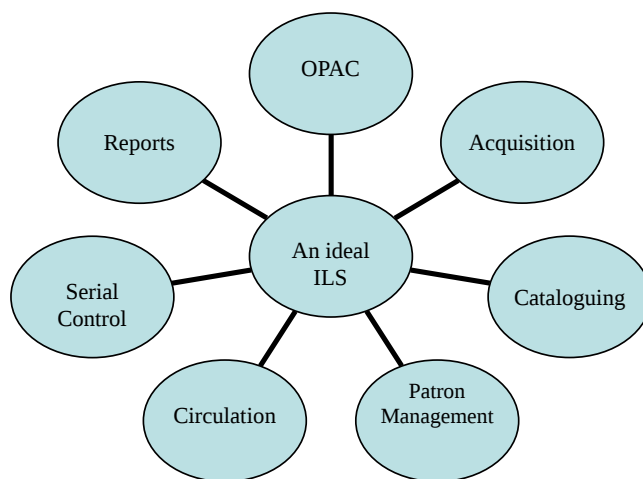
[...] multi-function web-based multimedia content Information Management System, generally built on a standard relational database structure. While the system architecture remains grounded in bibliographic citations presented via structured indexes, the basis of these indexes is moving beyond the MARC fields designed for text information to include metadata descriptions for multiple digital file formats and content.

Regardless of definition, an ILMS must be able to handle many formats and provide a variety of functions including manipulating electronic data, searching the Internet and facilitating resource-sharing. It must include a web-based OPAC, with basic patron features, such as reviewing checkouts and allowing online item renewal (Breeding, 2003). Wikipedia (2011) describes ILS as:

[...] an ILS usually comprises a relational database, software to interact with that database, and two graphical user interfaces (one for patrons, one for staff). Most ILS separate software functions into discrete programs called "modules", each of them integrated with a unified interface. Examples of modules might include:

- (1) acquisitions (ordering, receiving, and invoicing materials);
- (2) cataloguing (classifying and indexing materials);
- (3) circulation (lending materials to patrons and receiving them back);
- (4) serials (tracking magazine and newspaper holdings); and
- (5) the OPAC (public interface for users).

An ideal ILS has some basic mandatory modules, as shown in Figure 1. Koha has all of the modules of an ideal ILS. Bissels (2008) stated three main reasons for selecting



**Figure 1.**  
Modules of an ideal ILS

Koha: an updated system that fulfills current and future needs, the available source code can be changed as needed rather than needing to migrate to a new system and there should always be adequate support for Koha, unlike proprietary systems.

Koha has Library 2.0 features. Web 2.0 allows Library 2.0 to exist. At present, it is complicated to define Web 2.0 exactly, because it is such a popular buzzword. We usually define Web 2.0 by mentioning its characteristics. [Anderson \(2006\)](#) described it as “a blizzard of concepts and terms” and the terms include such things as blogs, wikis, sharing content, RSS (Rich Site Summary/Really Simply Syndication), folksonomy, social software, collaboration, podcasting, mash-ups and tagging. [O’Reilly \(2005\)](#) noted people are realizing that with Web 2.0, it is the services that matter more than the software used. Thus, it is more important to be blogging than worrying about which software is used to provide the blog.

Regarding Web 2.0, [Berners-Lee \(2006\)](#), Director of the World Wide Web Consortium which is the coordinating body for web development, wrote:

Web 1.0 was all about connecting people. It was an interactive space, and I think Web 2.0 is, of course, a piece of jargon, nobody even knows what it means. If Web 2.0 for you is blogs and wikis, then that is people to people. But that was what the Web was supposed to be all along. And in fact, you know, this Web 2.0, quote, it means using the standards which have been produced by all these people working on Web 1.0. It means using the document object model, it means for HTML and SVG, and so on. It’s using HTTP, so it’s building stuff using the Web standards, plus JavaScript, of course. So Web 2.0, for some people, it means moving some of the thinking client side so making it more immediate, but the idea of the Web as interaction between people is really what the Web is. That was what it was designed to be as a collaborative space where people can interact (np).

In defining Web 2.0, [Vossen and Hagemann \(2007\)](#) wrote:

Web 2.0 is seen as an ever-evolving, two-way information-communication model whereas the initial Web was based primarily on the time-tested, one-way, broad-cast approach, all of which leads inexorably towards the concept of the “Semantic web”. Wikis and blogs are two examples; wikis (means “fast” in Hawaiian) and blog (a contraction of “web log”) (np).

Additionally, [Rouse \(2011\)](#) wrote:

Web 2.0 (or Web 2) is the popular term for advanced Internet technology and applications including blogs, wikis, RSS and social bookmarking. The two major components of Web 2.0 are the technological advances enabled by Ajax and other new applications such as RSS and Eclipse and the user empowerment that they support (np).

From the above writings, it is clear that Web 2.0 is not limited to any one technology, but is a concept, an attitude or even a behaviour. Koha has many of the desired Web 2.0 features including patron comments, sharing, lists, carts, tags and RSS feeds.

Most of the features of Library 2.0 depend on Web 2.0 features. According to [Maness \(2006\)](#):

A theory for Library 2.0 could be understood to have these four essential elements:

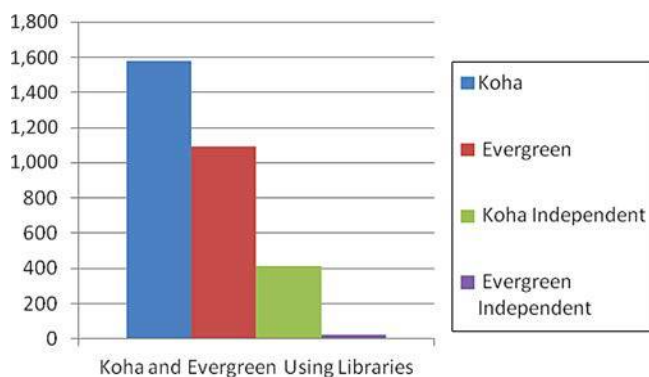
- *It is user-centered.* Users participate in the creation of the content and services they view within the library's web-presence, OPAC, etc. The consumption and creation of content is dynamic, and thus the roles of librarian and user are not always clear.
- *It provides a multi-media experience.* Both the collections and services of Library 2.0 contain video and audio components. While this is not often cited as a function of Library 2.0, it is here suggested that it should be.
- *It is socially rich.* The library's web-presence includes users' presences. There are both synchronous (e.g. IM) and asynchronous (e.g. wikis) ways for users to communicate with one another and with librarians.
- *It is communally innovative.* This is perhaps the single most important aspect of Library 2.0. It rests on the foundation of libraries as a community service, but understands that as communities change, libraries must not only change with them, they must allow users to change the library. It seeks to continually change its services, to find new ways to allow communities, not just individuals to seek, find, and utilize information (np).

There are 1,579 libraries presently using Koha around the world. Among them, 414 libraries are using Koha independently. This information is available in Marshall Breeding's official site *Library Technology Guide*. There are, however, many libraries which are not listed in the *Library Technology Guide*. Evergreen, Koha's nearest competitor, has 1,092 libraries using it, with only 22 libraries using Evergreen independently ([Breeding, 2012](#)), as shown in [Figure 2](#). According to [Yang and Hoffman \(2010\)](#), Koha's OPAC is more advanced and innovative than Evergreen's or Voyager's. Koha has an inventory module, patron card creator and patron image functionality, while Evergreen currently does not. Using Koha, library staff can upload numerous patron images in bulk. Evergreen does not have an authority control module, while Koha has good authority control. Authority control is important for managing authority records. On the other hand, Evergreen has Telecirc: Asterisk functionality and support, while Koha does not have this ([Open Source - Open Libraries, 2012](#)).

### Software requirements for Koha

Some prerequisites are needed for installation of Koha:

- Debian/Ubuntu, or another Linux-based operating system or Mac;
- Apache web server;



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**Figure 2.**  
Number of Koha and  
Evergreen-using libraries  
worldwide

- MySQL database server;
- different Perl packages;
- Zebra indexing software; and
- yaz packages for Z39.50.

The Solr search engine will come with Koha sometime soon. With Solr, Koha will have more search accuracy. Solr is considered to be the most powerful open-source indexing engine presently.

### Hardware requirements for Koha

Koha can run on any standard desktop or laptop, or server. Configuration of the machine basically depends on the number of records and daily user access to Koha. In general, the hardware and software requirements for Koha are 15 GB disk space for 100,000 records, at least 500 MB RAM for Zebra and external storage for backups (Mishra, 2009). Pandiyan (2007) suggested that Koha's hardware requirement be a minimum of a Pentium III Processor (1.00 GHz), 1 GB hard disk space, 256 MB RAM and a good network card. Overall, the hardware requirements for Koha server specification completely depend on the usage of Koha, which relates to the number of daily users, the number of records and items and the number of patrons. Another important factor is how many simultaneous users are expected.

Beyond the server side requirements, Koha requires only simple devices to work well. It is possible to print barcodes, circulation slips and call number labels with any kind of printer. A Star printer is suitable for printing circulation slips, as well as barcodes and call number labels. At least one client computer is necessary for catalogue searching for users and at least one for circulation. The rest depends on particular library needs. Koha supports self-circulation. Barcode readers or RFID (radio frequency identification) may be used for both circulation systems. If any library wishes to use RFID, 3M RFID works well with Koha as long as the library buys 3M equipment for RFID. Others also work but not as well as 3M RFID, according to feedback given to the author. Often one additional server machine is necessary for SIP2 (Standard Interchange Protocol 2) when using other RFID systems.

### Open-source trends

Open source is a collaborative software development method that harnesses the power of peer review and transparency of process to develop code that is freely accessible. Open source draws on an ecosystem of thousands of developers and customers all over the world to drive innovation. Traditional software companies provide only binary code and withhold source code, so users can run the software but cannot study, modify or improve it. In contrast to these proprietary models, open-source software (OSS) is distributed under non-restrictive licensing terms that generally include access to the source code ([Whitehurst, 2009](#)). With OSS, the human-readable source code for the programs is made available under a license which allows the user to use, change and improve the software, as well as to redistribute it in a modified or unmodified form ([Bissels, 2008](#)). The term “Open Source” is defined by the [Open Source Initiative \(2014\)](#) as the following:

Open source doesn't just mean access to the source code. The distribution terms of open-source software must comply with the following criteria:

- (1) Free Redistribution.
- (2) Source Code.
- (3) Derived Works.
- (4) Integrity of the Author's Source Code.
- (5) No Discrimination Against Persons or Groups.
- (6) No Discrimination Against Fields of Endeavour.
- (7) Distribution of Licensees.
- (8) License Must Not Be Specific to a Product.
- (9) License Must Not Restrict Other Software.
- (10) License Must Be Technology-Neutral (np).

Marshall Breeding, Director for Innovative Technologies and Research for the Vanderbilt University Libraries in Nashville, is a prominent library scientist. [Breeding \(2002\)](#) noted:

With open source software, the underlying source code must be made available along with the binary version that actually runs on a computer. This contrasts with the standard, commercial model of software distribution in which the source code remains the developer's closely guarded private property. Releasing source code reveals all the details of an application's inner workings. In the open source arena, this facilitates collaborative development. In the commercial arena, releasing source code can be a fundamental contradiction to basic business principles (np).

The term “open source” refers to the programming codes being open, free, accessible and changeable by anyone who has knowledge about programming languages. The main feature of open source is that it is under a GPL which ensures OSS criteria. In terms of library automation, OSS is playing a vital role in modern libraries. As the library is the backbone of an educational institution, it is important to offer modern services. [Thorin \(2001\)](#) wrote:

Libraries are important as places – as environments that support learning. It's true that the ways students and faculty obtain their information are changing. Technology has a powerful

influence [...] But it's also true that academic research libraries are changing to meet user expectations. Libraries are no longer simply warehouses of information that provide access to great printed troves of human knowledge. In today's fast-paced technological environment, libraries are places for students and faculty to collaborate, to find face-to-face guidance from expert librarians, and to conduct interdisciplinary research using both print and electronic resources (np).

Thus, technology plays a vital role in modern libraries and, without library automation, a modern library cannot run correctly and smoothly. In this regard, open source is the perfect answer for not only libraries in developing countries libraries but also libraries in developed countries, as open source gives freedom of choice to the libraries. Singh and Sanaman (2012) wrote that OSS allows libraries to participate in the development of systems and to provide innovative services that meet their needs.

### Implementation procedures for Koha

The next section of this paper presents the implementation procedure of Koha on Debian/Ubuntu in step-by-step fashion at the IBU library. It is helpful to add Koha users at the time of the Debian/Ubuntu operating system installation as a main user so that you can avoid many problems, such as permissions and ownerships problems. In the software selection option during the installation of Debian, select Desktop Environment, Standard System and other required software. Help sheets for Debian installation are available at [www.debian.org/releases/stable/installmanual](http://www.debian.org/releases/stable/installmanual) and Ubuntu installation from the site <https://help.ubuntu.com/11.04/installation-guide/index.html>. After the installation of Debian is complete, Koha can be installed. There are many installation manuals for Koha. Koha community manuals are the perfect manuals for all. Instructions for installing Koha are available from <http://wiki.koha-community.org/wiki/Category:Installation>. After completing the command line installation, the web installer of Koha needs to run. There are some steps to complete a web installation of Koha. First, point the address in the browser to run the web installer – <http://localhost:8080> as shown in Figure 3. Log in by using the Koha database username and password used at the time of Koha installation. After logging in, the language selection page will appear. Select your desired language and proceed. The web installer checks all dependencies of Koha. Continue the web installation according to your choice. Remember that if the library has large collections, choose Zebra. Zebra is an additional indexing software for Koha. If you choose Zebra, searching will work faster. NoZebra is the other option and will provide a slow search because the NoZebra search works directly with MySQL database. Therefore, it takes more time to display search results.

After completing the web installation, configure Koha using the administration module. In this case, a library called IUB Library was created. Thereafter, item types were established. The author created ten item types for IUB Library. These are shown in Figure 4. Item types include CD/DVD, movies, computer files, continuing resources, e-books, music, mixed materials and visual materials. Item type creation is important in Koha, as every item added must have an associated item type.

The IUB Library has four floors with bookshelves on two floors. One floor is for general shelf items and another is for reference, reserve, movie and CD/DVD shelves. In Koha, they were called “General Stacks” and “Reference Stacks”, “Movie Shelf” and “Book CD/DVD Shelf”, respectively. Stacks (locations) can be created by using Home > Administration > Authorized Values and find it in the LOC categories. Patrons were

**Figure 3.**  
First step of Koha web  
installer



divided into seven categories: board, library staff, teacher, IUB officer, graduate student, undergraduate student and interlibrary loan. User categories were created through Home > Administration > Patron Categories > New Category. After creating patron categories, enter “cities and towns” information in Koha by using Home > Administration > Cities. Circulation rules can be set up through Home > Administration > Circulation and Fine Rules according to library policies. The author initially set up default rules for all patron categories and then went back to attach specific rules for IUB Library users according to the IUB Library borrowing and fine rules. Next, set up various system preference configurations, such as mandatory digit length of user id and password, and mandatory patron fields, such as surname, first name, address, e-mail, mobile and card number.

The next step for the IUB Library was to migrate all data from the previous system ISIS (Integrated Set of Information System) to MARC 21. A print view format in ISIS was prepared in accordance with the MARC 21 bibliographic format. This file was exported to a text file and then converted into a MRK file format using the MarcEdit software. The library control number in the 001 field of the MARC record and the organizational source code in the 040 field in the MARC record were assigned. A complete MARC record with items holding information is shown in Figure 5. These records can be imported into Koha by converting MRK files into MRC files and uploading through the “stage MARC records for import” module of Koha. This step is shown in Figure 6. The author used the web interface to import MARC data in Koha. There is a command line method available, but the web interface is much easier for non-technical staff.

Previously, the IUB Library used Microsoft Access for serials management. With Koha, serial records management became possible with the same system. The library has many serials, including *The Times*, *Economist*, *Readers Digest* and many others. Serial records were entered in Koha, including bibliographical issue information. Koha uses the 952 field for holding information. In CDS (Computerized Documentation System)/ISIS, there were accession numbers with particular bibliographic records. Accession numbers in \$p, library name and branch name were used accordingly in \$a



Figure 4.  
IUB Library item types in  
Koha

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= LDR 00000nam\022000000\04500
= 001 00001148
= 008 110328s1991|||||a||g||000\0\eng\d
= 020 \0$a155542340X
= 040 \0$aBD-DhIUB$cBD-DhIUB
= 082 04$a362.1072073$219
= 100 1\0$aAnderson, Odin W.
= 245 00$aThe Evolution of health services research :$bpersonal reflections on applied social science /$cOdin
W. Anderson
= 250 \0$a1st ed.
= 260 \0$aSan Francisco :$bJossey-Bass Publishers,$c1991.
= 300 \0$axxi, 246 p. ;$c24 cm.
= 490 1\0$aThe Jossey-Bass health series
= 504 \0$aBibliography : p. 225-233
= 520 0\0$aHealth and Population
= 556 \0$a1994-09-11
= 650 17$aHealth services$2Spines
= 650 17$aSocial services$2Spines
= 650 27$aSocial aspects$2Spines
= 650 27$aResearch$2Spines
= 830 0\0$aThe Jossey-Bass health series
= 852 4$aIUB Library$jGeneral Shelf
= 952 \0$p1599$bIUBL$d2011-04-21$cGEN$2ddc$yBK$aIUBL$t1$0362.1072073 A548e

```

**Figure 5.**  
MARC record import into  
Koha

and \$b, shelf location in \$c, record making date in \$d, classification scheme name in \$2, Koha item type in \$y and call number in \$o of the 952 field in the MARC records. This way it was easy to export holdings information with bibliographic records. The IUB Library was using book accession numbers as barcodes, and there were no length similarities between the accession and printed barcode numbers on books. Thus, the author inserted some zeros before the barcode number in Koha by using SQL (Structured Query Language) commands. Reference books were labelled as such by using SQL commands. This was possible because there were specific characters in the accession numbers of reference books.

The IUB Library previously maintained a database of library patrons, so it was easy to import patron information into the Koha database. Patron information in a Microsoft XL format was converted into a CSV (comma-separated value) file and imported into Koha. Patron images were then uploaded. Many staff members helped with this due to the large number of images. After uploading patron images, books were checked out in Koha. Meanwhile, a real IP (Internet Protocol) address was obtained for the library server and a sub-domain for hosting the OPAC. By assigning a real IP and a sub-domain, Koha became live on the Internet. This let all functionality of Koha be used.

### Difficulties in the previous system

The IUB Library was previously using CDS/ISIS to manage library databases. They were also using Librarian which was developed by two students of the Computer Science Department of IUB. Librarian was being used for circulation purposes and ISIS was being used for searching library material but only for library staff. Thus, if a user needed to know something regarding any book, they had to consult with library staff and have them search for the book. In the same manner, after searching, there was no way to know the present availability status of the required library holdings except by physically going to shelves. Also, the report module, an important tool for libraries, was not available in Librarian. IUB Library was fulfilling the report function by using

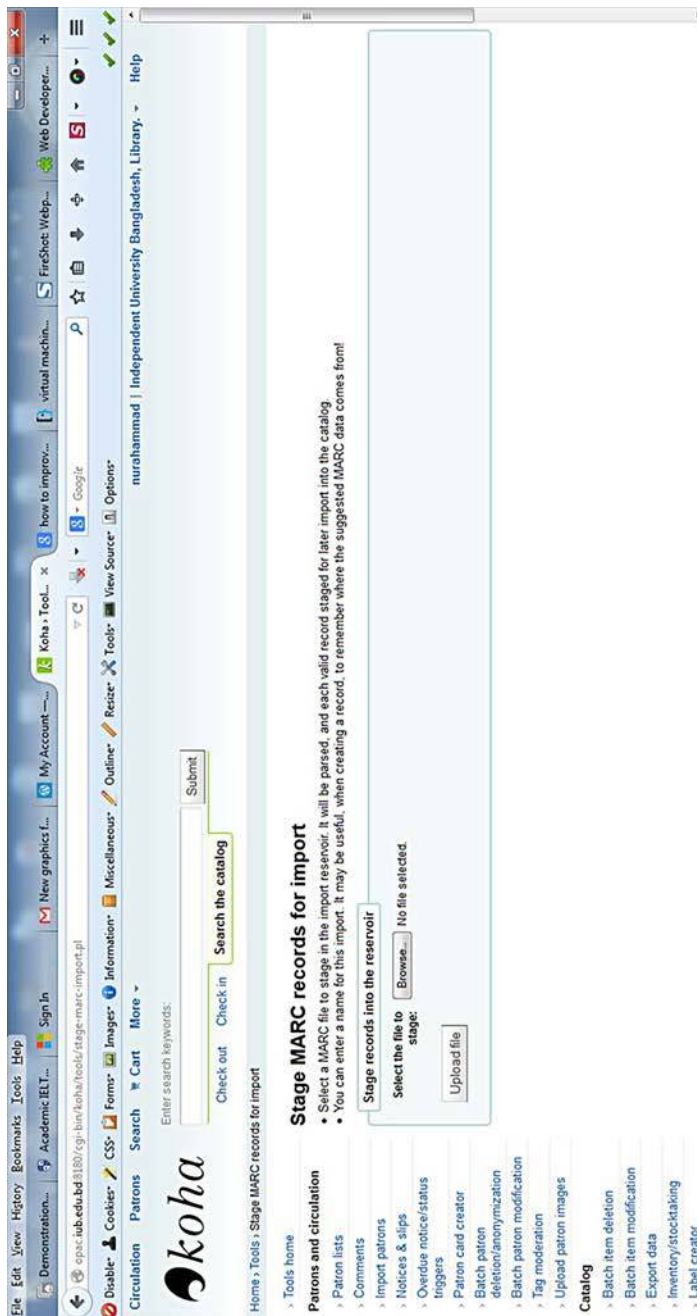


Figure 6.  
MARC record import into  
Koha

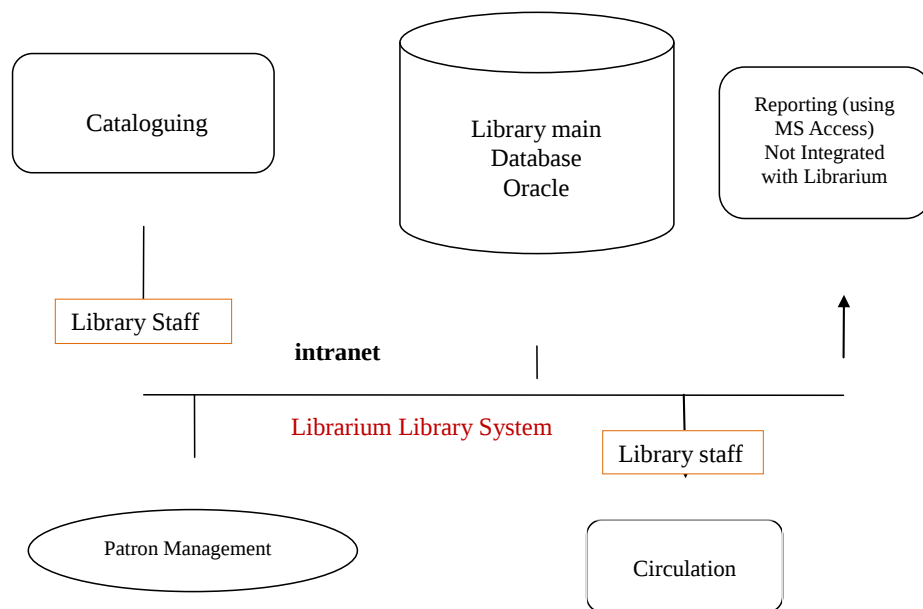
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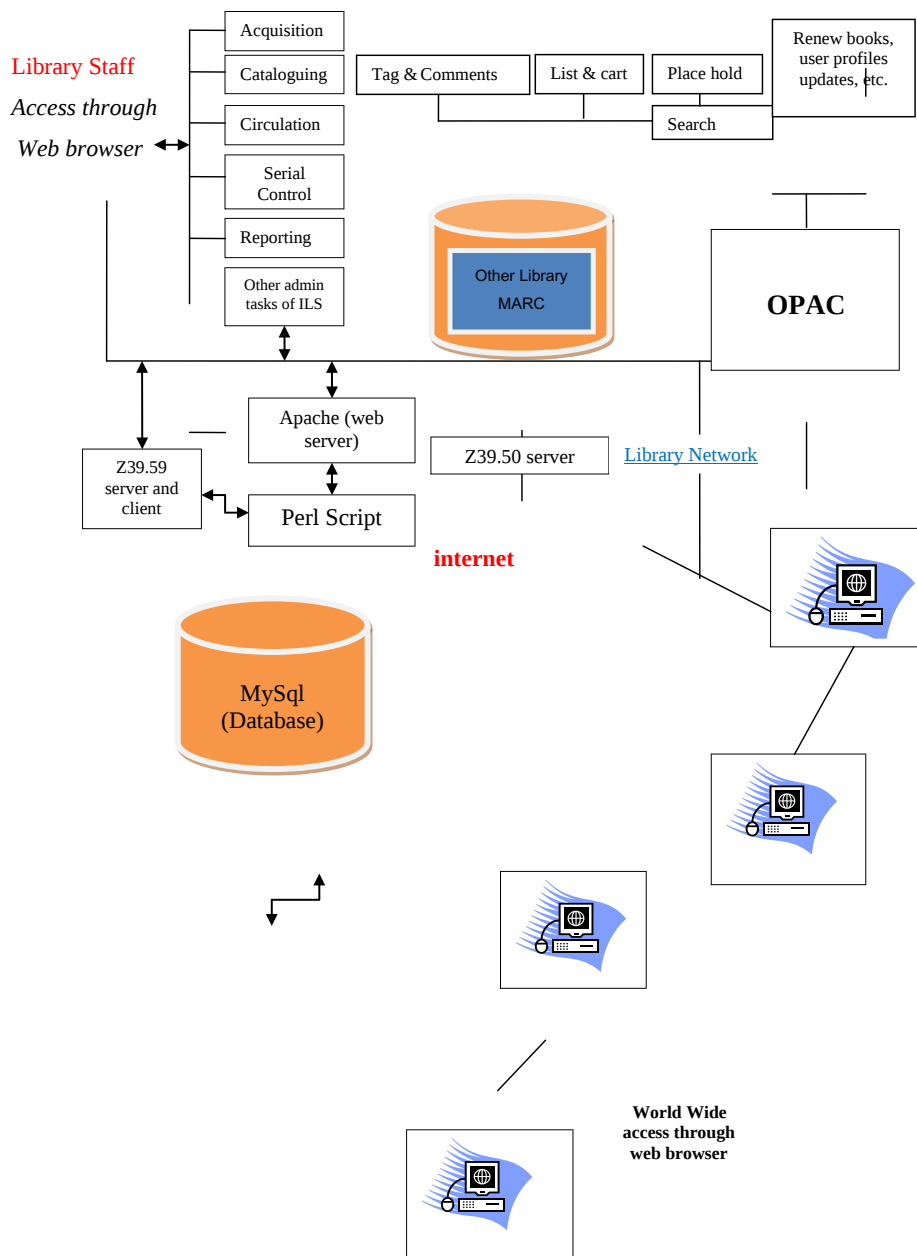
Microsoft Access and connecting with Oracle, the main library database. Additionally, Librarium had no barcode, label or patron card creator system, thus library staff were using other software for doing those tasks. This was time-consuming for the library staff and users too because users had to wait to get their required books. Processing time was also high in the previous system. There were no data import and export facilities in that system. Thus, bibliographical information from Librarium could not be exported. Additionally, Z39.50, a protocol to exchange data among the libraries, was not present in that system. Figure 7 demonstrates the previous system at IUB Library.

### Functionalities after implementing Koha

After implementing Koha, IUB Library staff and users had much more functionality, as shown in Figure 8. Once the library started using the acquisition module of Koha, it became possible to maintain a library budget with the ILS. Koha allowed for the creation and use of MARC 21 bibliographic records. The circulation module of Koha made it possible to send circulation confirmation messages, place hold messages and overdue notices to users. It is also possible to send these notices as text/SMS messages to patrons. Library staff receives place hold messages and purchase suggestion messages from users of the OPAC. Thus, library staff became more conscious of and informed about their services. Additionally, cataloguers are now importing bibliographical information using Z39.50 and easily adding new books titles in Koha. In the same way, they are adding serial information into the ILS. The IUB Library is now printing barcodes and call number labels through Koha. It saves the time of the library staff so they can now spend more time in providing other services. In addition, IUB Library staff are able to get a variety of library statistics regarding library statistics through the report module. The report module provides both onscreen and in a CSV format.



**Figure 7.**  
Previous library system at  
IUB Library



**Figure 8.**  
The Koha ILS at IUB  
Library

After the implementation of Koha, library users have OPAC functionalities. They can search library materials through the OPAC and get the present status of a book. There are two types of searching facilities in Koha. One is simple search and the other is advanced search. In advanced search, users are able to search by using Boolean logic and to narrow the search as well. The search result can be sorted according to author, title, publication date, call number and other ways in ascending and descending order. In addition, users are able to make lists and carts in the OPAC which they can print, e-mail and download. List is a very important tool in the Koha OPAC. If someone makes a list of books, it will be helpful for other users who have an interest in those listed books and the subjects covered. Users can also place holds on library materials by using their OPAC login. Library materials can be tagged by users and have user comments added. Library users are now able to submit purchase suggestions through the OPAC and they will be informed about their purchase suggestion status through automated e-mails. They can choose their messaging preferences. Users are able to renew their borrowed books by logging in to the OPAC. As well, Koha stores the user's reading history and search history if the users create searches after logging in. Search history can be deleted. Users can see overdue fines in their OPAC account. Koha has massively improved service quality at the IUB Library.

### Discussion

There is no doubt that open-source products provide great opportunities for libraries around the world. The development rate of Koha is amazing. The worldwide developers of Koha are always trying to keep pace with the development of other ILSs and they continue to try to make Koha a top ILS which can fulfill all modern library needs. Libraries can use Koha to offer modern services completely free of cost. Libraries in developing countries have especially benefited from open-source ILS, such as Koha, as they do not have the financial ability to purchase ILS for their libraries, but generally have sufficient library staff to run the library. Giri (2012) noted that many libraries are seeking high-quality but low-cost technology solutions, as budgets are decreasing while user expectations are increasing. He added that OSS is an excellent help to librarians to effectively automate operations while keeping in line with user needs. This explains why Koha can be implemented in their libraries without facing difficulties. Most of the libraries of Bangladesh have CDS/ISIS databases and it is easy to convert CDS/ISIS data to MARC 21. By using the Koha ILS, librarians can provide all modern library services to their users.

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**About the author**

Nur Ahammad has a BSS honor's and MSS in information science and library management with postgraduate diploma in information and communication technology. He has implemented Openbiblio while at the Bhuiyan Academy. Currently he works for the IUB Library where he recently implemented Koha. The OPAC URL is <http://opac.iub.edu.bd> for those wanting to look at it. Ahammad also implemented Dspace Institutional Repository at the IUB Library located at: <http://dir.iub.edu.bd:8081>. In addition, he has implemented Koha for the Chittagong campus of the Independent University, Bangladesh, and Martin Luther College. In addition to his other duties, Ahammad is conducting training on Koha and MARC 21 at the Manarat International University Library and the Bangladesh University of Health Sciences Library. Nur Ahammad can be contacted at: [ahammadnur59@gmail.com](mailto:ahammadnur59@gmail.com)