A Comparative Study of Koha and Other Open Source Integrated Library Management Software: An Analysis of Features and Functionality

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Abstract-Open source software offers users the freedom to run, copy, distribute study, modify, share, and improve the software for any purpose. For libraries, these systems eliminate the initial costs associated with commercial software and provide greater control over their operational environments. It is crucial for library professionals to understand the benefits of open source software and actively engage in its development and implementation. This discussion explores the criteria for selecting library management software and advocates for the adoption of open source options. The paper focuses on the features of Koha, pioneering open source library management software that has been rapidly adopted in India and worldwide. By evaluating Koha's advantages and disadvantages, the study also compares it with other open source software such as PMB, PhpMyLibrary, and OpenBiblio. The aim is to identify the standard features of integrated library management software through a review of related literature and practical experiences.

Keywords: Open source software, integrated library management software, Koha, PMB, PHP My Library, Open Biblio

INTRODUCTION

Open source software has become a significant trend in software development and distribution, emerging as a response from the developer community to restrictive software copyright laws [1]. It is provided free of charge, offering users the freedom to run, modify, and distribute it without any limitations. For small and medium-sized libraries, the automation of routine operations can be financially challenging due to the high costs associated with commercial Integrated Library Systems (ILS). The emergences of open source library management systems offer a cost-effective solution, enabling libraries to automate their operations with minimal financial investment.

OPEN SOURCE SOFTWARE MOVEMENT

The history of open source software traces back to the early days of computing, when programmers and developers often shared their software freely. However, the advent of commercial software companies focused on profit-making led to restrictions on the sharing of source code. Key milestones in the history of open source software include:

- 1983: Richard Stallman initiated the GNU Project.
- 1985: The Free Software Foundation was established.
- 1991: Linus Torvalds developed the Linux kernel.
- 1998: Eric Raymond co-founded the Open Source Initiative (OSI).

The terms "free" and "open source" are frequently used interchangeably to describe the unrestricted distribution of software. Popular licenses facilitating this include the GNU General Public License (GPL), BSD License, GNU Lesser General Public License, MIT License, Mozilla Public License, and Apache License. Although these licenses vary in their specific terms and conditions, they all uphold the user's freedom to use, copy, distribute, and modify the software. These principles resonate with the philosophy of the Free Software Foundation, which asserts, "Free software is a matter of the users' freedom to run, copy, distribute, study, change, and improve the software" [2].

According to Free Software Foundation users can enjoy the following freedom with free softwares:
- ✓ The freedom to run the program for any purpose.
- ✓ The freedom to study and modify the program.
- ✓ The freedom to copy the program.
- ✓ The freedom to improve the program.

The development of open source software is a social and collaborative activity. Eric Lease Morgan compares this process to scholarly academic communication, as it resembles a peer review process. It starts with identifying a problem and writing a computer program to solve it. The initial phase involves sharing this program with a group of peers. As a community forms around the software, members begin to use it. When someone encounters a similar but slightly different problem, they may enhance the original program. If this enhancement aligns with the original concept, it is shared back with the original programmer. Often, the enhancement is incorporated into the program, the updated software is redistributed, and the process begins anew. [3].

- Need for Library Management System (ILS)

An integrated library system (ILS) is an enterprise resource planning system tailored for libraries. It is designed to coordinate and automate various library functions, including the online catalog, circulation system, and acquisitions system [4]. An ILS typically meets the requirements for cataloging, serial control, circulation, OPAC, and other information management services. Library professionals embrace the use of ILS because it enhances the efficiency of housekeeping operations. With ILS, data entry for bibliographic and user information is done only once and can be utilized for all other purposes.

- Recommended Features of Library Management Software.

According to Biswas, Goutam and Paul, Dibyendu [5] selected core features good library management software are. The core library operations or the functional modules such as acquisition, cataloguing, circulation, serial control, article indexing must be performed without any imperfection by the software.

- ✓ Enhanced services like customizing report generation, reservation facility, module for interlibrary loan, union cataloguing, authority file support, and the software should also support retro-conversion.
- ✓ The Binary or source code should available so that the software can be customized in house.
- ✓ The software should be compatible to develop database and exchange data in international standards and formats like MARC21, CCF, MARC-XML, ISO-2709, and Z39.50.

- ✓ The points of whether the developer of the software is an institution, or reputed company or few individuals are important. Institution will be the first preference; reputed company is the next priority. The software developed by individual or group of individuals may deviate from continuity.
- ✓ Revision of software since the time of its first launch is one of the important factors etc.

- Salient Features of Koha Open Source Software

Some of the salient features of this Koha open source software are listed below:

- ✓ Licencing: The of Koha open source is covered under the most widely used open source software licensing system called GNU General Public License.
- ✓ Source Code & User Mannual: The open source binaries and source code of NewGenLib open source software are downloadable. Installation notes for Linux and Windows are also available at their site. The user manual is also downloadable.
- ✓ User's Feedback: The users of the software can post their feedback with views, problems, solutions, discussions, etc to the organization.
- ✓ Architecture & Backend: It is web-based and has a multi-tier architecture; it uses Java (a swing-based librarian's GUI), the JBoss (J2EE-based Application Server) and PostgreSQL as default backend.
- ✓ Functional Modules: Koha's functional modules are: acquisition management (monographs and serials); technical processing; circulation control; system configuration; a desktop reports application and an end-of-day process (scheduler) application.
- ✓ Data Create & Exchange Format: It is compliant with MARC-21 format. It has a MARC editor. It allows seamless bibliographic and authority data import into cataloguing templates
- ✓ Mail Server: SMTP mail servers can be configured for e-mails and that can be sent form functional modules.
- ✓ Open Access Compatibility: Koha open source allows creation of institutional open access (OA) repositories compliant with the OAI-PMH.
- ✓ Koha open source is Unicode 3.0 compliant.
- ✓ RFID Technology: It has inbuilt RFID support.

- Advantages of Koha as Open Source Software

The advantages of Koha open source may be perceived as follows in the light of the advantages of open source software as pointed out by Richard W Boss [7]:

Ability to tailor to fit local needs: The availability of the source code means that a user can modify and enhance the software to more closely fit to its own needs. Unlike with proprietorship software, the user, not a vendor, sets the development priorities. The user is also able to set its own priorities for 'bug fixes'.

No restriction on use: Unlike commercial software, there are any contractual boundaries on how the software will be used. While of Koha covered under the GNU General Public License that assures users about right to distribution and the recipients also have the right to modify and redistribute. A subsequent user may, therefore, decide to protect the enhancements that it makes by copyrighting them.

Low cost: There is no charge for the software; therefore, the monitory burden required for the commercial software is avoided. The major cost involves with the ongoing development and maintenance. However, if a user does a lot of 'tailoring to fit unique local needs' then only the cost will escalate.

However, the above-mentioned author has identified several disadvantages associated with open-source software. These include a lack of coordination, inadequate training and technical support, insufficient participation, absence of guarantees and remedies, as well as issues related to scalability and speed. Despite these challenges, the developers of the Koha open-source software are expected to address these drawbacks. Nevertheless, open-source software may not match the scalability and speed of commercial software, as the general-purpose programming languages used in open-source projects are often less scalable and slower compared to those used in proprietary solutions.

We have adopted a straightforward scoring system to evaluate different software based on their available features. Each software is awarded one point for each feature it possesses and zero points for features it lacks, as shown in the tables in the annexure. However, it is important to note that not all features hold equal significance.

Brief description of popular open source ILS: KOHA, PMB, PhpMyLibrary, OpenBiblio

Koha is the first open source ILS with large user community. Developed initially in New Zealand by Katipo Communications Ltd and first deployed in January of 2000 for Horowhenua Library Trust, it is currently maintained by a team of software providers and library technology staff from around the globe [4]. Koha is written in PERL language and requires MySQL database, Apche web server and can work with Linux or Windows.

Acquisition, cataloguing, serial control, OPAC, and circulation are the functional module available with Koha. Other features are MARC, Z39.50, barcode, RSS feeds, web interface and multi branch library support. Active users and developers community makes the Koha project hectic and it result in quick bug fixing, implementation of new features and scheduled launching of new versions. In 2006 alone, Koha updated three times with major changes.

User support for Koha is available through documentation website (www.kohadocs.org), Wiki, mailing lists and open source vendors. Koha now have more than one hundred registered users.

In 2001, Paul Poulain from Marseille, France, started enhancing Koha by adding numerous new features, most notably support for multiple languages. By 2010, Koha had been translated from its original English into French, Chinese, Arabic, and several other languages. In 2002, support for the cataloging and search standards MARC and Z39.50 was added, later sponsored by the Athens County Public Libraries. Paul Poulain co-founded BibLibre in France in 2007.In 2005, an Ohio-based company named Metavore, Inc., operating as Liblime, was established to support Koha. They introduced several new features, including support for Zebra, sponsored by the Crawford County Federated Library System. Zebra support enhanced search speeds and improved scalability, enabling the system to handle tens of millions of bibliographic records.The latest stable release of Koha is 16.5.3, and it remains a highly active project. It's important to note that the size of the code base might be misleading because Koha stores user interface translations alongside the actual source code, and tools like Ohloh might not always differentiate between the two. [8]
Home page: www.koha.org

- PMB

The PMB project, initiated by François Lemarchand in France in 2002, predominantly features its documentation, software interface, and website in

French. Translation efforts from French to other languages are ongoing. PMB includes modules for circulation, OPAC (Online Public Access Catalog), cataloging with UNIMARC support, serial control, and an SDI (Selective Dissemination of Information) system. Its installation and maintenance are easier on both Windows and Linux compared to other open-source ILS systems.PMB offers an easy-to-use graphical interface for database backup, maintenance, and the import and export of bibliographic records, allowing librarians to manage daily database backups without needing a computer administrator. Key features include user-friendly web interfaces for librarians and users, support for UNIMARC and Z39.50, an integrated barcode generator, multi-language support (including French, English, Spanish, Italian, and Portuguese), and the ability to import and export bibliographic records in various formats. Additionally, it provides detailed documentation for both users and administrators.

Home page:
https://alternativeto.net/software/phpmybibli/about/

- PhpMyLibrary

PhpMyLibrary is a PHP MySQL library automation application developed by Polario Babao in the Philippines. The application includes modules for cataloging, circulation, and OPAC (Online Public Access Catalog). It also features an import/export capability and strictly adheres to the USMARC standard for adding materials. [6].

Home page: www.phpmylibrary.org

- OpenBiblio

OpenBiblio is a user-friendly, automated library system written in PHP. It includes essential modules such as OPAC (Online Public Access Catalog), circulation, cataloging, and staff administration, making it well-suited for automating small libraries in schools, churches, and clubs. Currently, OpenBiblio is in its early development stages, and contributions from users and developers are crucial for the project's growth and sustainability.

Home page: http://obiblio.sourceforge.net/

CONCLUSION

This paper examines various open-source library software, comparing their features and evaluating their suitability for use in Indian libraries. The study highlights that these software solutions generally offer all the necessary functional modules and web interfaces for effective library operations. Among them, Koha is noted for its comprehensive features, making it a standout choice compared to other open-source options.

The adoption of open-source software for library automation is gaining traction among library professionals. However, many libraries face challenges due to a lack of in-house expertise in supporting and developing open-source software and training staff in new technologies. In such cases, libraries can consider hiring vendors specializing in open-source software support. Software service agencies and professionals are encouraged to provide the necessary assistance for implementing and maintaining these solutions in libraries.

Open-source integrated library systems (ILS) like Koha and PMB are found to be as secure and reliable as their proprietary counterparts, fulfilling all functional requirements for library management. In contrast, PhpMyLibrary and OpenBiblio are more suitable for smaller library collections due to their less comprehensive feature sets. These systems lack essential modules like acquisition and serial control but still offer key functionalities such as web OPAC, document status inquiry, reservations, holds through OPAC, customizable user interfaces, and MARC data import/export. Despite some limitations, PhpMyLibrary and OpenBiblio effectively support crucial library functions like cataloging, OPAC, and circulation.

Raising awareness among library professionals about the benefits of open-source software is essential. This awareness can lead to substantial cost savings in library automation and improve the overall performance of library systems.

REFERENCE

[1] Chen, Shun Ling. "Free and Open Source Software Licensing Primer." International Open SourceNetwork.2005-06-23. UNDP. 13 Jul 2021 <http://www.iosn.net/licensing/foss-licensing-primer>.

[2] "The Free Software Definition." 14 November, 2021.FreeSoftware Foundation. <http://www.fsf.org/licensing/essays/free-sw. html>.

[3] Morgan, Eric Lease. "Open source software in libraries." Musings on Information and Librarianship.12, November, 2021.Infomotions, Inc. <http://infomotions.com/musings/biblioacid/>.

[4] The Koha Development Team & Katipo Communications Ltd., "Koha v.2.2." Koha. The Koha Development Team & Katipo Communications Ltd. <http://www.koha.org/>.

[5] Biswas, Goutam and Paul, Dibyendu "NewGenLib, The First Indian Open Source Software: a Study of Its Features And Comparison With Other Software", 23rd National Seminar of IASLIC held at Bose Institute on Library Profession in Search of a New Paradigm, Kolkata, 10-13 December, 2008, Special

Publication No.48, PP 333-340, ISSN- 09723668

[6] Babao, Polerio T.. "PhpMyLibrary: Open source library automation system." PhpMyLibrary. <http://www.phpmylibrary.org/>.

[7] Boss, Richard W, "Open source integrated library system software". From <https: //alair.ala.org/bitstream/handle/11213/258/Open %20Source%20ILS%20Software.pdf?sequence= 101&isAllowed=y

[8] SenthilKumaran, P., & Sreeja, K. P. (2017). A study on managing Koha open source library management system in the University Library, Central University of Kerala. *International journal of research in library science* (IJRLS), 3(1), 91-101. www.ijrls.in

ANNEXURE

Table 01: Comparative General Features of Selected Software				
General Features	Koha	PMB	PhpMy Library	Open Biblio
Authority file & controlled vocabulary	1	1	0	0
Client server architect	1	1	0	0
Complete web based functions	1	1	1	1
Customized report generation	1	1	1	1
Give technical support after installation	1	1	0	0
GUI and color	1	1	0	0
Interlibrary loan system	1	1	0	0
Intranet support	1	1	1	1
Retro conversion	1	1	1	1
Standard report administration	1	1	1	1
Support International metadata standard	1	1	1	1
Support multilingualism	1	1	0	0
Support network environment	1	1	0	0
Ability to build digital library	1	0	0	1
Ability to build repository	1	0	0	0
Article Indexing	1	0	0	0
Associate component found in open source	1	0	0	0
Digital library integration	1	0	1	1
Linux and Windows OS compatible	1	0	0	0
No restriction of use	1	1	1	1
Power search facility	1	1	0	0
Scalable and high speed	1	1	0	0
Union cataloguing	1	1	0	1
Score	23	15	08	10

Table 02: Comparative Features of Functional Modules of Selected Software				
Functions	Koha	PMB	PhpMy Library	Open Biblio
Acquisition	1	1	0	0
Budget Control	1	1	0	0
Cataloguing of monograph	1	1	0	0
Cataloguing of electronic documents	1	1	1	1
Circulation	1	1	1	1
Inter Library Loan	1	1	1	1
Library Statistics	1	1	1	1
OPAC	1	1	1	1
Reports Generation	1	1	1	1

Cataloguing of website	1	0	1	0
Import/Export	1	1	1	1
Serial Control	1	1	0	0
Stock taking	1	1	1	1
Score	13	12	9	8

Table 03: Comparative Features of OPAC of Selected Software				
OPAC Features	Koha	PMB	PhpMy Library	Open Biblio
Multimedia	1	1	0	0
Library Map	N.F	0	0	0
Web site cataloguing	1	1	0	0
Electronic documents cataloguing	1	1	0	1
Reservation through OPAC	1	1	1	1
Can staff modify index field	1	0	0	0
Can staff modify display format	1	1	1	1
Facility for WEBPAC	1	1	1	1
Score	07	06	03	03

Table 04: Comparative Features of Circulation of Selected Software				
Circulation Features	Koha	PMB	PhpMy Library	Open Biblio
Issue	1	1	1	1
Return	1	1	1	1
Renewal	1	1	1	1
Reservation	1	1	NF	NF
Use of barcode technology	1	1	0	0
Fines as per different users and documents	1	1	0	0
Reservation (for specific time period)	1	1	0	0
Report generation	1	1	1	1
Use of RFID	1	N.F	1	N.F
Score	09	08	05	04

Table 05: Comparative Features of Cataloging & Information Services in Selected Software				
Information Services	Koha	PMB	PhpMy Library	Open Biblio
Printing of catalogue in AACR format	1	0	1	1
Printing of catalogue in CCC format	1	0	1	0
Exporting /Importing of data	1	1	1	1
Report generation	1	1	1	1
SDI service	1	NF	NF	NF
CAS service	1	0	0	0
Score	06	02	04	03