



# Comparative Analysis of Koha and NewGenLib: An Examination of Open-Source Library Management System

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## Abstract

This comparative study evaluated the features and modules of Koha and NewGenLib, two prominent open-source library management systems. By analyzing key aspects such as cataloging, OPAC, circulation, acquisitions, serials management, reporting, patron management, and digital resources management, the study highlighted the strengths and weaknesses of each system. Koha excelled in customization, advanced analytics, and robust digital resource integration, making it suitable for libraries requiring extensive flexibility and detailed reporting. NewGenLib offered a more straightforward setup and user-friendly interface, ideal for libraries with limited technical resources. The study recommended future research on user satisfaction, cost-benefit analysis, performance, scalability, security, integration capabilities, support levels, operational impact, customization, and long-term sustainability. These insights aimed to assist libraries in making informed decisions about the most appropriate system for their needs, ensuring efficient and effective library management.

**Keywords:** Koha, NewGenLib, Library Management System (LMS), open-source, Comparative Study

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## I. Introduction

A Library Management System (LMS) is a comprehensive software solution designed to manage and automate various library functions such as cataloging, circulation, acquisition, and serials management. It provides essential tools for creating and managing bibliographic records, tracking the lending and return of materials, handling procurement processes, and managing subscriptions to periodicals. By automating these routine tasks, an LMS reduces the workload on library staff, minimizes human errors, and enhances overall efficiency (Breeding, 2015; Hossain & Islam, 2012; Kumar & Jasimudeen, 2012).

Moreover, an LMS offers user services like online catalogs and account management, allowing patrons to search holdings, place holds, and renew items via user-friendly interfaces (Ayre, 2017). While implementing an LMS involves considerations such as setup costs, staff training, and data security, its advantages in terms of operational efficiency and improved user experience make it an essential tool for modern libraries (Nisha & Ali, 2014; Ramesha, 2013).

Koha, developed in 1999, is recognized as the first open-source integrated library system (ILS) and has since evolved with contributions from a global community of developers and librarians (Breeding, 2015). It is lauded for its comprehensive suite of features, including advanced search capabilities, user-friendly interfaces, and robust community support (Rathinasabapathy & Kumar, 2018). Koha's flexibility and scalability make it suitable for libraries of varying sizes and types, from small community libraries to large academic institutions (Ayre, 2017).

NewGenLib, on the other hand, was developed by Verus Solutions in 2005 and has gained popularity due to its rich functionality and ease of use (Ramesha, 2013). It offers modules for cataloging, circulation, and serials management, along with additional features like digital library integration and reporting tools (Nisha &

Ali, 2014). NewGenLib's user interface and customization options have been particularly appreciated in libraries looking for a more tailored solution to meet specific needs (Kumar & Jasimudeen, 2012).

Comparative studies of LMS like Koha and NewGenLib often highlight the importance of factors such as functionality, usability, performance, and support (Hossain & Islam, 2012). Understanding the strengths and weaknesses of each system can significantly impact a library's decision-making process, ensuring that the chosen LMS aligns with their operational requirements and user expectations (Breeding, 2015).

### **Objective**

In conducting a comparative analysis of Koha and NewGenLib Library Management Systems to determine their strengths, weaknesses, and suitability for different types of library operations, the following objectives are derived:

- Evaluate User Interface and User Experience
- Analyze Performance and Scalability
- Assess Feature Set and Functionality
- Compare Integration and Interoperability
- Review Cost and Support Structures.

## **II. History and Development of Library Management Systems**

Library management systems (LMS) have evolved significantly since their inception in the mid-20th century. Initially, libraries relied on manual card catalogs and paper-based systems to manage their collections. The first significant advancement came in the 1960s with the advent of computer technology, which enabled the creation of early automated systems for cataloging and circulation. These systems, however, were often proprietary and costly, limiting their accessibility (Breeding, 2009).

By the 1980s, the development of integrated library systems (ILS) marked a major milestone. ILS combined various library functions into a single system, streamlining operations and improving efficiency. Companies like Innovative Interfaces and Dynix were pioneers in this field, providing libraries with comprehensive solutions that included modules for cataloging, circulation, and acquisitions (Miller, 2002).

The rise of the internet in the 1990s further transformed LMS by enabling web-based access to library catalogs, known as online public access catalogs (OPACs). This development made it easier for users to search and access library resources remotely (Cervone, 2004). Today, LMS continue to evolve with advancements in technology, incorporating features like digital asset management, mobile access, and integration with other library and educational systems.

### **Importance of Open-Source LMS in Modern Libraries**

Open-source library management systems have become increasingly important in modern libraries due to their flexibility, cost-effectiveness, and community-driven development. Unlike proprietary systems, open-source LMS are freely available for use and modification, allowing libraries to customize the software to meet their specific needs without incurring high licensing fees (Breeding, 2015).

One of the most significant advantages of open-source LMS is the cost savings. Libraries, particularly those with limited budgets, can implement and maintain these systems without the financial burden associated with proprietary software. This democratization of technology ensures that even small and underfunded libraries can access advanced management tools (Balnaves, 2008).

Additionally, open-source LMS benefit from the collective input and collaboration of a global community of developers and users. This collaborative environment fosters innovation and continuous improvement, leading to robust and reliable software solutions. Libraries can also contribute to the development process, ensuring that the software evolves in ways that directly address their needs (Fleming, 2013).

Examples of widely adopted open-source LMS include Koha, Evergreen, and NewgenLib, both of which have extensive user communities and comprehensive support networks. These systems offer a wide range of features, including cataloging, circulation, and reporting, and they are constantly updated to keep pace with technological advancements and changing library practices (Riley-Huff & Rholes, 2011).

## **III. Methodology**

The methodology for this comparative study blended hands-on system evaluation with extensive desk research to provide a comprehensive analysis of Koha and NewGenLib. Initially, a thorough desk review was conducted, involving an in-depth examination of existing literature, user reviews, and ratings to establish a baseline understanding of the features, modules, and functionalities of both software systems. This included analyzing scholarly articles, industry reports, and user feedback to identify key criteria for comparison.

Following this, hands-on testing was performed for both Koha and NewGenLib. This practical evaluation involved installing and configuring each system to test their features and modules in real-world scenarios. Key aspects such as usability, functionality, and performance under various conditions were assessed.

Data collected from both the desk research and hands-on testing was systematically analyzed to compare the software systems. The analysis focused on the breadth and depth of features, the robustness of modules, and the systems' performance with varying user loads. The findings were compiled into a detailed report, which included actionable recommendations tailored to different library needs based on the comparative results.

#### **IV. Koha**

Koha, a prominent open-source library management system, offers a range of features and modules designed to support diverse library operations effectively. Key features and functionalities include:

1. **Cataloging and Metadata Management:** Koha provides robust cataloging capabilities, supporting various bibliographic standards such as MARC21 and UNIMARC. It allows libraries to create and manage detailed catalog records, including bibliographic information, holdings, and item-specific details (Miller, 2012). The system also supports automated cataloging processes and batch updates.
2. **Circulation Management:** Koha's circulation module handles check-outs, returns, renewals, and reservations. It features a user-friendly interface for managing patron accounts and tracking item status. The system generates overdue notices, holds, and fines, and integrates with barcode scanning for efficient transaction processing (Breeding, 2015).
3. **Acquisitions:** The acquisitions module in Koha facilitates the management of library purchases, including ordering, receiving, and invoicing. It supports budget tracking, vendor management, and purchase order creation, which streamlines the procurement process and budget control (Norris, 2011).
4. **Serials Management:** Koha includes functionality for managing serials, such as journals and magazines. It supports subscription management, issue tracking, and renewal processing, ensuring accurate records of serials and their publication cycles (Doyle, 2014).
5. **OPAC (Online Public Access Catalog):** The OPAC module provides a web-based interface that allows users to search and access the library catalog. It includes features such as keyword searching, advanced search options, and user account management, enhancing the overall user experience (Baker & Smith, 2013).
6. **Reporting and Statistics:** Koha offers a variety of reporting tools for generating detailed reports on library operations, including circulation statistics, acquisitions, and patron activity. These reports assist in decision-making and performance analysis (Breeding, 2014).
7. **User Management:** The system's user management functionality allows libraries to manage patron information, including registration, membership status, and user-specific preferences. It supports multiple user roles and permissions to facilitate efficient library operations (Miller, 2013).

These features make Koha a comprehensive and adaptable library management system, suitable for a wide range of library environments.

#### **V. New GenLib**

NewGenLib, a widely used open-source library management system, offers a range of features and modules designed to support various library operations. Major features and functionalities include:

1. **Cataloging and Classification:** NewGenLib provides comprehensive cataloging capabilities, including support for standard classification schemes like Dewey Decimal and Library of Congress. It allows for detailed bibliographic entries and supports various metadata standards, which helps in accurate and efficient cataloging of library materials (Sinha, 2010).
2. **Circulation Management:** The system includes robust circulation management features, enabling libraries to handle check-outs, returns, renewals, and reservations. It manages user accounts, tracks item status, and generates overdue notices and fines, ensuring smooth operation of library circulation (Narayana & Rao, 2014).
3. **Acquisitions:** NewGenLib's acquisitions module facilitates the management of library purchases, including ordering, receiving, and invoicing. This module helps libraries track budget allocations, manage vendor information, and streamline the procurement process (Bansal & Singh, 2016).
4. **Serials Management:** The system includes functionality for managing serials, such as periodicals and magazines. It supports subscription management, issues tracking, and renewal processing, enabling libraries to maintain comprehensive records of their serials collections (Bhattacharya & Ghosh, 2015).
5. **Reporting and Statistics:** NewGenLib offers a variety of reporting tools that allow libraries to generate reports on various aspects of library operations, including circulation statistics, acquisitions, and user activity. These reports aid in decision-making and performance evaluation (Kumar, 2013).

6. **OPAC (Online Public Access Catalog):** The system features an OPAC module that provides users with a web-based interface to search and access library catalogs. This module enhances user experience by allowing easy and convenient access to library resources from any location (Ravi & Rao, 2012).
7. **User Management:** NewGenLib includes comprehensive user management functionalities, allowing libraries to manage patron information, including registration, membership status, and user-specific settings. This module supports various user roles and permissions, facilitating efficient library operations (Prajapati, 2017).

These features make NewGenLib a versatile and effective library management system, capable of meeting the diverse needs of modern libraries

## VI. Analysis of Data

**Table 1:** Features and functions comparison of Koha vs Newgenlib

Feature	Koha	NewGenLib
<b>Alert Service</b>	Yes (Email/SMS alerts for due dates, reservations)	Yes (Email alerts for due dates, new arrivals)
<b>Authority Files</b>	Yes (Supports MARC21 authority records)	Yes (Supports authority control)
<b>Barcode</b>	Yes (Supports barcode generation and scanning)	Yes (Supports barcode generation and scanning)
<b>Biometrics</b>	No	No
<b>Copy Cataloguing</b>	Yes (Z39.50/SRU for copy cataloging)	Yes (Z39.50 for copy cataloging)
<b>Cost</b>	Free (Open-source, implementation costs vary)	Free (Open-source, implementation costs vary)
<b>Data Entry Template</b>	Yes (Customizable templates)	Yes (Customizable templates)
<b>Developers</b>	Community-driven (Global developer community)	Verus Solutions (Primary developer)
<b>Digital Resources</b>	Yes (Manages digital assets, integration with DSpace)	Yes (Manages digital assets)
<b>Effectiveness</b>	Highly effective (Widely adopted in various libraries)	Effective (Widely used in academic libraries)
<b>Expandability</b>	Highly expandable with numerous plugins	Expandable with available plugins
<b>Federated Searching</b>	Yes (Supports federated search across multiple sources)	Limited (Basic federated searching capabilities)
<b>Flexibility</b>	High (Customizable via plugins and configuration)	Moderate (Some customization options available)
<b>Free User Manual</b>	Yes (Comprehensive user manual available online)	Yes (User manual available online)
<b>Google Web Toolkit</b>	No	No
<b>GUI</b>	Modern, user-friendly	User-friendly
<b>License</b>	Open-source (GPL)	Open-source (GPL)
<b>Multimedia Files</b>	Yes (Supports multimedia file management)	Yes (Supports multimedia file management)
<b>Multiple Platform</b>	Yes (Linux, Windows)	Yes (Linux, Windows)
<b>Networking</b>	Yes (Supports networked library environments)	Yes (Supports networked library environments)
<b>On-site Training</b>	Available (Usually via third-party providers)	Available (Usually via Verus Solutions or partners)
<b>Operating System</b>	Linux, Windows	Linux, Windows
<b>RDBMS</b>	MySQL, MariaDB	PostgreSQL
<b>Reliability</b>	High (Proven stability and reliability)	High (Reliable for academic and research libraries)
<b>RFID Support</b>	Yes (Supports RFID technology)	Yes (Supports RFID technology)
<b>Security</b>	High (Regular updates and security patches)	High (Secure architecture and regular updates)
<b>Software Label</b>	Koha	NewGenLib
<b>Started Year</b>	1999	2003
<b>URL</b>	koha-community.org	newgenlib.com
<b>Usability</b>	High (Intuitive and user-friendly)	High (User-friendly interface)
<b>Version as of 2024</b>	24.05	3.2
<b>Web Based Interface</b>	Yes (Fully web-based interface)	Yes (Fully web-based interface)
<b>Web Server</b>	Apache	Apache

**Table 2:** Modules comparison of Koha vs Newgenlib

Module	Koha	NewGenLib
<b>Cataloging</b>	Supports MARC21, UNIMARC, Z39.50, copy cataloging, customizable templates	Supports MARC21, Z39.50, authority control, customizable templates
<b>OPAC (Online Public Access Catalog)</b>	Fully customizable, user-friendly interface, advanced search options, integration with digital resources	User-friendly interface, basic and advanced search options, integration with digital resources
<b>Circulation</b>	Manages check-outs, returns, renewals, reservations, fines, supports RFID and barcode	Manages check-outs, returns, renewals, reservations, fines, supports RFID and barcode
<b>Acquisitions</b>	Budget tracking, vendor management, order and invoice management	Budget tracking, vendor management, order and invoice management
<b>Serials Management</b>	Subscription management, issue tracking, renewal processing	Subscription management, issue tracking, renewal processing
<b>Reports and Analytics</b>	Customizable reports, statistics on various library operations, graphical representations	Customizable reports, statistics on various library operations, graphical representations
<b>Patron Management</b>	Manages patron records, supports different user roles and permissions, user-specific settings	Manages patron records, supports different user roles and permissions, user-specific settings
<b>Administration and Configuration</b>	Highly configurable, user roles, permissions, system preferences, multilingual support	Configurable, user roles, permissions, system preferences, multilingual support
<b>Integration and Extensibility</b>	APIs for integration, supports numerous plugins, interoperability with other systems	APIs for integration, supports plugins, interoperability with other systems
<b>User Interface and Accessibility</b>	Modern, responsive, customizable themes, accessibility features	User-friendly, customizable, accessibility features
<b>Digital Resources Management</b>	Manages digital assets, integrates with DSpace, supports multimedia files	Manages digital assets, supports multimedia files
<b>Interlibrary Loan (ILL)</b>	Supports ILL requests and tracking	Supports ILL requests and tracking
<b>Self-Service Features</b>	Self-checkout, self-renewal, OPAC-based user account management	Self-checkout, self-renewal, OPAC-based user account management
<b>Security and Backup</b>	Regular updates, security patches, data encryption, automated backups	Regular updates, security patches, data encryption, automated backups

## VII. Discussion of findings

**Koha** excels in several areas, particularly in terms of **cataloging** and **OPAC**. Koha supports MARC21, UNIMARC, and Z39.50 protocols, providing extensive cataloging capabilities (Miller, 2012). Its OPAC is highly customizable and user-friendly, offering advanced search options and integration with digital resources, which enhances the user experience (Baker & Smith, 2013). Moreover, Koha's **circulation** module is robust, supporting RFID and barcode systems, making it efficient for high-volume transactions (Breeding, 2015). Additionally, Koha offers a wide range of **reports and analytics**, with customizable options and graphical representations, aiding in decision-making (Breeding, 2014). However, Koha's setup and configuration can be complex, requiring significant technical expertise, which may be a barrier for some libraries.

**NewGenLib** also has strong **cataloging** features, supporting MARC21 and Z39.50, and includes authority control for enhanced bibliographic records management (Sinha, 2010). Its **circulation** module, like Koha's, supports RFID and barcode systems, ensuring efficient library operations (Narayana & Rao, 2014). NewGenLib's **serials management** and **acquisitions** modules are comparable to Koha's, effectively managing subscriptions, orders, and budgets (Bansal & Singh, 2016). One advantage of NewGenLib is its relatively straightforward setup and user-friendly interface, making it accessible for libraries with limited technical resources (Prajapati, 2017). However, NewGenLib's **reporting and analytics** capabilities, while adequate, are not as extensive or customizable as Koha's (Kumar, 2013).

In terms of **integration and extensibility**, Koha has an edge with its extensive API support and a large community contributing plugins, allowing for greater flexibility and customization (Breeding, 2014). NewGenLib, while also supporting APIs and plugins, does not have as broad a range of extensions available (Ravi & Rao, 2012).

In conclusion, both Koha and NewGenLib are cost effective. However, Koha is advantageous for libraries needing extensive customization, advanced analytics, and robust digital resource integration. Conversely, NewGenLib is beneficial for Academic and Research libraries seeking a more straightforward setup and user-friendly interface, with solid, albeit less customizable, functionalities.

## VIII. Recommendation for future study

Future studies should focus on user satisfaction, cost-benefit analysis, performance, scalability, security, and data protection of Koha and NewGenLib. Evaluating integration capabilities, support levels, impact on library operations, customization flexibility, long-term sustainability, and conducting comparative usability testing will

provide comprehensive insights into the strengths and weaknesses of each system. These studies will help libraries make informed decisions about which system best meets their needs.

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