

## OPEN SOURCE SOFTWARE IN LIBRARIES: A CASE STUDY

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**ABSTRACT** - *The article discuss about library software, looking into the history and development of Open source Software (OSS) in India, the types of library software that libraries can utilize for improve library functions and services and importantly, the selection criteria for library software. However, first generation universities were observed to be the first trials of integrating library software in a support by UNESCO in 1992. The library software used at first was TINLIB. But as Open Source Software became available, the university libraries shifted to the use of software such as Alice for windows and Linux. The article also identified three types of Open source software to include commercial software, freeware software and open source software, and each was briefly discussed as a concept. On a last note, selection criteria for any library software were outlined to begin with a 'need analyses', among others.*

### 1. INTRODUCTION

Ideally, a library is known of important functions as collection development, cataloguing, classification and serial control etc. And on another hand, library services include, reference service, referral services, current awareness service (CAS), selective dissemination of information (SDI), indexing and abstracting services and so on. However, with the introduction of Library Software (LS), library functions and services are better done effectively and efficiently without much great job on the side of the librarian, saving time in addition, cost of production and many more benefits. The library is today seen has as an organization that recognizes selection, collection, management, process and dissemination at the right time to the right person. Users now see libraries as places where information is retrieved through sources in electronic formats like electronic catalog listings, e-books, e-journals and internet access. The innovation of computer itself is the primary change agent in the way libraries operate. It would be better to say that the librarian and library services are assisted by computer hardware and software now (Sharma, 2007). Simply put, the

computer hardware and software collectively form what is called library automation. In other words, library automation is the mechanization of library activities using the computer (Uddin, 2009). The automation is economically feasible and technologically required in modern libraries to cope up with the requirements of new knowledge, the enormous increase in the collection of materials, problems of their acquisition, storage, processing, dissemination and transmission of information (Bhardwaj & Shukla, 2000). As automation improves library functions and service delivery, Open source Software improves library automation. However, library software comes in three different models the commercial software (the subscription fee based), shareware software (also called freeware that appears on limited trial period after which users are encouraged to purchase the software) and the open source software (free of cost). A Library Software to define at this juncture refers to application software, also called Open source Software or System (OSS) or Library Management Software (LMS) that serve as a venture store enabling system for a library to claim its resources, purchases, bills paid, and other vital circulation activities as loans. It is equally important to note that, an ILS usually comprises a relational database, software to interact with that database, and two graphical user interfaces (one for patrons, one for staff).

### 2. HISTORY AND DEVELOPMENT OF OPEN SOURCE SOFTWARE IN INDIA

Like the case in other developed and neighboring countries, very few libraries in India were able to acquire library software at first sight as a result of their overall high cost. Libraries in India spent ineffectual years planning and preparing for the automation of their libraries due to the exorbitant cost of software and hardware including the training of library staff and users. The introduction of library software globally was mostly fee based and or freeware (that requires payment after a specified period of trial). Until the initiative of open source software that libraries in India began to embrace the automation of their libraries in numerous. According to Ukachi (2012), the advent and development of Open Source Software in the present age, has made the transition from "traditional" to "technology based" library services, which gives room for more efficient service

provision, very easy and cost effective hence, libraries are now adopting them in their technical services, digitization processes, and general library management. Though, few libraries in India mostly academic libraries were able to adapt to the innovation in the 1990s. Agboola (2000) in Uzomba et.al (2015) stated that “the greatest impetus to library automation in Indian university libraries so far has come from a World Bank project”.

### 3. TYPES OF OPEN SOURCE SOFTWARE

The first theory about software was propounded by Alan Turing in his 1935 essay titled *On Computable Numbers, with Application to the Entscheidungs problem* (Wikipedia, 2010). Software can be defined as the program that are used with particular computer systems (Concise English Dictionary, 1999), and is intangible. Wooster (2009) opines that software is the most valuable intangible product in the market place. However, a Library Software (LS), otherwise called Library Management Software (LMS) or Open source Management Software (ILMS) or Open source Software/Systems (OSS) is an enterprise resource planning system for a library, used to track items owned, orders made, bills paid, and patrons who have borrowed (Uzomba, 2015). In line, Muller (2011) stated that “Open source Systems are multifunction, adaptable software applications that allow libraries to manage, catalog and circulate their materials to patrons”. There are three known category of Library Software namely: commercial software, freeware software and open source software.

### 4. COMMERCIAL LIBRARY SOFTWARE:

This type of library software are mostly used in develop worlds; due to their cost effects not all libraries can afford the purchase. Hundreds of commercial library software have been developed and run successfully today in the world and there are many software directories and other tools available that help librarians to select suitable software for their libraries (Malik, 1994). This kind of software usually provides end solutions to particular application problems, because of it high rate of reliability. Great efforts are managed in their development and are competitive in the market. Therefore they are reliable, easy to use and in many instances, well-documented (Malwad, 1995). LIBSYS, Alice for Windows, SLIM, EASYLIB, SOUL are all examples of popular commercial library software.

#### 4.1. LibSys

This software is an Open source automation software developed by LibSys Corporation New Delhi, to handle large collection in the academic libraries. It is a multi user system designed to run on super/Mini/Micro computers including PCs in UNIX, XENIX, and VMS setting. It is designed and developed.

#### 4.2. Features of LibSys

- It support for installation of software and its smooth operations at a site
- It has seven basic modules like acquisition, cataloguing, circulation and serial control, OPAC, Web OPAC, Article Indexing
- It has an index generation procedure and therefore, does not require any separate database software
- It is based on three tier architecture providing and independent front-user interface, the transactions processor including a powerful bibliographic search database manager/engine with option to user Oracle, /SQL server as back-end RDBMS.
- It can be modified to operate with other software such as oracle, Unify, Ingres, etc
- It also supports CD ROM, Networking and multilingual use and is available in ‘Client Server’ implementation with web enabled features. Thus can be accessed through a web browser and provides for networking of libraries.

#### 4.3. Soul

This software is also library automation software designed and developed by INFLIBNET and UGC companies in India. SOUL is specially designed to work in large academic libraries as it is capable of handling large records and it is user friendly software that works under client-server environment. It has the retrospective conversion facility from CDS/ISIS. Like LibSys, it has various modules like acquisition, circulation, cataloguing, serial control and Online Public Access Catalogue module (OPAC).

#### 4.4. Features of Soul

- Windows based user-friendly software, well-designed screens, and logically arranged functions with extensive help messages
- Multi-user and multi-lingual software
- Supports internationally known standards such as CCF, MARC 21 and AACR-etc.
- Provides export and import facility and adhere to ISO 2709 format
- It has seven basic modules such as acquisition, cataloguing, circulation and serial control, OPAC and Web OPAC

#### 4.5. Alice for Windows (AFW)

This is another form of the commercial library software. Alice, popularly known as Alice for Windows all over the world was developed by Softlink International Australia and marketed through a number of agencies such as Softlink Asia Pvt. Limited New Delhi, India. This software is suitable for all types of libraries (school libraries, public libraries, academic libraries, including private sectors, booksellers, educational resource centers, charities, hospital, prisons, law practices, police forces, industrial companies, consultancies and palaces. The automation package comes in distinct versions such as Public Library Version, Special Library Version, Academic Library Version and School Library Version. The software provides data protections, retrospective conversion facility and online tutorial and help system, including training programme, feedback system through user groups, free newsletters. The software has many modules. Modules of AFW for an academic library for example:

- Acquisition
- Management
- Circulation
- Inquiry
- Periodicals
- Journal Indexing
- Web Inquiry
- Rapid retrospective
- Inter library Loans
- Patron self checking

#### 4.6. Features of Alice for Windows

- Modular and menu driven package
- Supports barcode technology
- Operates on single user environment as well as on multi-user environment using Novell Netware/Windows 2000
- Has rapid retrospective and special data protection function
- Menu driven- use by both library staff and users
- Has multiple searching facilities
- Multimedia function – scanning of data videos, graphics, photographs, sound clips in records
- Special data protection features – saving of data up to last record entered in case of power failure
- Complete documentation – reference manual, tutorial manuals

- Facilitates import and export data

### 5. FREeware LIBRARY SOFTWARE

This kind of library software is popularly known as shareware software. Shareware software is fee based but unlike the commercial library software, it is characterized with free access for a start. Meaning, the software is free at instant usage for a specified period, after which a library is forced to purchase the software before allowed to continue using. It has the advantage of free trial, though the [sourcecode](#) of a freeware is typically not available, unlike the opensource; to be discussed later. A library can so decide whether to continue or not with the software after the trial time elapse. It is a public domain software which is usually obtained through shareware libraries and it licenses usually prohibit modifications and commercial redistribution. Free software is defined in terms of user liberty which reflects the goal of the free software initiative that can be used by anybody, but restricted for non-commercial reasons. Registered users are charged for manuals by the original writer. One most commonly found freeware library software is Computerized Documentation System - Integrated Set for Information Systems (CDS/ISIS) which is very popular in developing countries.

### 6. CDS/ISIS

The software was created for the Central Library of the ILO in Geneva to process abstracts of documents. In 1975, the ILO decided that it could no longer support ISIS and made the software and the Code available to other organizations. Thus, UNESCO's Division of Software Development and Applications office of Information programme and service now develop the software in a menu-driven generalized information storage and retrieval system, designed specifically for computerized management of structured non-numerical data bases. The software has a series of versions, CDS/ISIS was first released in 1985, 2nd version 2.3 in 1989, 3rd version 3.07 in 1992 and latest version 3.08 is available now. More than 5,000 libraries worldwide are licensed users of CDS/ISIS. It is a non-numeric database specially designed for bibliographic records, and is multilingual, with a database that can hold 16 million records. Including a powerful indexing and searching techniques.

#### 6.1. Features of CDS/ISIS

- It can run on a LAN network
- It allows users to create non-numerical databases
- It handles variable length records, field and subfield, including repeatable field
- Database can contain over 16,000,000 (16 millions) records

- It allows users to create database of their choice
- It can Sort and print facility in desired format, (catalogue or index format) and the indexing capabilities are extremely dependable and fast
- Its search facilities are simple, accurate, and rapid
- Integrated application program language of CDS/ISIS allows the user to introduce new software

## 7. OPEN SOURCE SOFTWARE

This kind of library software is the opposite of commercial library software earlier talked about. The software is released free of cost and its licenses usually prohibit commercial redistribution. It has its benefits such as no cost, flexibility and freedom and perhaps reliable but not as reliable as the fee library software. It's obvious, what you pay for is your sole choice and what you are given free may not be satisfactory. A definition of open source is "free distribution and redistribution of software and source code; licenses that allow distribution of modifications and derived works and non-discrimination against persons, groups or fields of endeavor" (OSI; [www.opensource.org](http://www.opensource.org)). Source code is usually available under a license that permits users to study, change, and improve the software and to redistribute it in modified or unmodified form. According to Engard (2011) OSS are applications whose source code is made available for use or modification in line with users' needs and requirements are known with some characteristics which make it distinct from proprietary software. Many libraries that could not afford the fee library software go on an alternative of OSS. Examples of OSS used by libraries today include; Koha, Evergreen, ABCD software, CDS/ISIS, WinISIS, New GenLib, Emilda, PMB (PhpMyBibli), WEBLIS, Greenstone etc.

## 8. WINISIS

This software is a new windows version of the known CDS/ISIS (Computerized Information Service /Integrated Scientific Information System) software. WinISIS was developed for the reason that CDS/ISIS was not friendly with the WINDOWS operating system. Though not originated but was developed by UNESCO in 1997 and the first WinISIS version officially realized was version 1.31 launched in 1998. It runs on a single computer or in a local area network. WINISIS uses the same database structure as CDS/ISIS. Database created by DOS version of the CDS/ISIS system do not require any changes to be processed by the Windows version of WINISIS system. WINISIS, which is fully compatible with the MS-DOS version of CDS/ISIS, is designed for both current MS-DOS users who wish to shift to the windows environment, and for new users. It includes all the features of the MS-DOS version except some database utilities such as the database re-initialization. WINISIS is in c++, facilitating the portability level. The software is

available at:

<http://www.unesco.org/isis/files/winisislicense.html>. 8.1.

### 8.1. Features of WINISIS

- It has an integrated application programming language(CDS/ISIS Pascal and the CDS/ISIS Dynamic Link Library (ISIS\_DLL)
- It allows users to build relational databases
- It has a powerful hypertext functions allowing the design of complex user interface
- It is compatible between the Disk Operating System (DOS) and Windows versions
- It has a maximum record size that has been increased almost 4 times (30 KB in the Windows version as compared with 8 KB in the DOS versions)
- Availability of graphical user interface (GUI)
- It has availability of new numerical and string functions useful in classification function

## 9. KOHA

This is an Open Source Software, which according to Boss (2008) is free software that includes the original source code used to create it so that users can modify to make it work better for them. According to Projektlink (2010) and Wikipedia (2012), Koha is the first open-source Open source software (ILS) in use worldwide by public, school and special libraries which its development was steered by a growing community of libraries and users collaborating to achieve their technological goal. While Muller (2012) ranked Koha ILS the most complete Open source Software because of a number of functions including routing periodicals, inventory control, authorities, generation of notices to customers, order tracking, among others. The name koha comes from a Māori term to mean a "gift" or "donation". It is a web-based ILS, with a SQL database (MySQL preferred) backend, cataloguing data stored in MARC and accessible via Z39.50 (the latest version). The software is available at <http://www.koha.org>

### 9.1. Features of Koha

- It support acquisition/budgeting system, circulation (such as circulation tracking system), membership, accounts and reports
- It has a library system intranet
- It has a simple, clear web based interface for patrons and library staff
- It has a search interface easily customizable

- Also, a simple acquisition system for smaller libraries
- Able to catalogue websites as normal items
- Web based OPAC and circulation system
- Full MARC support
- Auto- remind notice and fines
- Barcode support
- Manages online and off line resources with the same tool

## 10. EVERGREEN

This is also an open source Open sourceSystem (ILS). It includes circulation and cataloguing features as Koha, OPAC, SIP2.0 support for interaction with software administrator and search/retrieval through Z39.50. Evergreen is on Open Scalable Request Framework (Open SRF), often spoke about as 'open surf'; that permits developers to create applications for Evergreen with a minimum of knowledge of its structure. It operates on Debian or Ubuntu Linux servers. And it is operable in English. The software is available at: <http://evergreen-ils.org/downloads.php>

### 10.1 Features of Evergreen

- It has circulation function for staff to check items in and out to patrons
- It has acquisitions for staff to keep track of those materials purchased such as invoices, purchase orders, selection lists, and so on
- Also, cataloging used to add items to the library's collection and input information, classifying and indexing those items.
- It support Online public access catalog (OPAC) for patrons to locate and request books, view their account information, and save book information in Evergreen "bookbags"
- It has a flexible, powerful reporting retrieval of statistical information stored in the database
- It supports Standard Interchange Protocol (SIP2.0) enabling interaction with computer management software, self-check machines, and vital applications
- It is compliant with Z39.50 and obtainable for Windows & Linux

## 11. SELECTION CRITERION FOR LIBRARY SOFTWARE

This is an important section to talk about Open sourceSoftware. Scholars have no doubt caution and struggled in defining procedures in library software selections, due to the vast increase in daily software advertised by associated vendors. Sharma (2007) agreed with Resnick of estimated more than ten thousand current titles in the field of educational software alone exist. Therefore, the need for a careful selection of any library software for a library is not something to debate about. Selection must always be based on merit. The quality of software is very important especially for the smooth running of a computer system and other programs. If software is faulty (pram), it can delete files, crash computers and do other damage. Selecting high quality software requires some processes or guidelines which a library needs to follow. Adogbeji and Onohwapor (2007); Idowu (2000); Obajemu et.el (2013) outlined library software selection procedures or guidelines which can be followed by library managers and other information experts in India in particular and Africa in general. These are:

- Do a need analysis; that is identifying the need of the library in terms of functions & services
- Consider the various alternatives available
- Request for proposals from software vendors
- Follow due process in arriving at final decision
- Seek knowledge from experts and libraries already using the same software
- Read relevant literature
- Demonstrate the software
- Recommend the preferred option to management
- Keep all records relating to automation

Obajemu et.el (2013) added that, 'due cognizance must be taken in the areas of cost, reputability of the vendors (software produced by institutions or companies would be preferable to those produced by individuals) and revision policy, others include number of parameters available for each module and facility to import bibliography 1802709 format.

## 12. CONCLUSION

ILS (Open source Software) is known for many acronyms as ILS (Open source system), LMS (Library Management Software), ILMS (Open source Management Software) or shortly spoken LS (Library Software) are seen as a repository for libraries information resources and services.

Library Software is obtainable by libraries as either free, on a fee base or on what is called shareware (payable after trial). And the use of Library Software had gain popularity worldwide. Many libraries in developed and developing countries have automated their libraries with vast usefulness in resources and services. Examples of these software used by libraries includes LibSys, Soul, Alice for Windows, CDS/ISIS, WinISIS, Koha, Evergreen etc. The selection criterion for a Library Software is another important part of a library's acceptance of the software due to the large number and daily production of software by vendors; however, detail had earlier been discussed on the subject.

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