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Transition from Closed to Open: Case of Integrated Library Automation Software in India

T K Gireesh Kumar and Muruli

Abstract

Prior to Open Source Integrated Library Systems (OSILSs) availability, libraries found two alternatives to automate their housekeeping operations - either develop an exclusive in-house software system or purchase a commercial one. Commercial packages differ with each other on pricing and license agreements and function modules. Now, many libraries are shifting from such traditional proprietary automation systems where the cost of software is assumed to be a major concern, to free/open source system considering the flexibility and adaptability in using and customizing it to fit their local needs. The study evaluates the rate of adoption of OSILS in Indian libraries to understand the trend in comparison with proprietary systems available. Also examines attitude and perceptions of Indian library community towards adopting OSILS. The challenges confronted by the library community in adopting OSILS and the reasons for migrating to it are also examined. The study found Koha to be a favored OSILS option to which many Indian libraries are migrating. The study also found that acceptance of OSILS in higher education libraries in India is much higher than that of school and public library system where proprietary systems still dominate.

Keywords: Library Automation, OSILS, Open Source, Integrated Library System, MIS, Software, ILMS, OSILMS, Koha.

Introduction

Application of computers to perform the essential routines and operations of a library in a systemized way is one of the basic and quality services requirements that need to be achieved in the initial stages of development of a library. Contemporary and advanced technologies are tailored along the time to align the library activities with technology for better efficiency, indirectly demanding augmentation of information professionals' knowledge on technology. Information and Communication Technology (ICT) gives power hitherto undreamed of for knowledge management especially through the Internet, bibliographic database management systems and digital archiving solutions. It also enables pooling the world's knowledge resources in different media and retrieval of specific data from anywhere in any format within seconds. Modern libraries are faced with the challenges of integrating traditional and emerging formats, balancing resource allocation between traditional and upcoming technologies and building new information management processes and procedures (Trainor, 2009). Library automation is one of the most sensible aspects that considerably improve the speed, quality, and

effectiveness of functions and services. Automating a library with suitable software in a systematic way offers accountability to the activities executed. In that sense, the library software market in India has become increasingly competitive and more volatile than ever. To satisfy the needs of technically competent generation of library users and to effectively provide variety of functions by managing the products on different formats, selection of suitable automation software is mandatory.

Majorities of commercial packages are expensive and are protected by copyrights. Commercial vendors have a lead role in promoting their products and libraries were totally depending on these vendors. Libraries were charged frequently for software maintenance, updates and every aspect of related tasks. The customer is not allowed to edit, modify or customize the software in any way and libraries have no choice even if they are burdened with their commercial system. The ever-changing needs of libraries compel them to adopt the system that is flexible for constant modification. The open source movement has provided attractive solutions for libraries to provide quality services to the patrons. Open Source Software (OSS) continues to gain momentum among the library community across the world. For libraries from developing countries where the budgetary restrictions hinder providing quality information services, OSILS is an apt choice.

Open Source Integrated Library System (OSILS)

Open source software is making mark in library automation landscape in India. According to the definition of Open Source Initiative, the open source does not mean just access to the source code. The distribution terms of open-source software must comply with set of criteria such as free redistribution, and aspects concerned with source code, derived works, author's source code integration, non-discrimination against persons or groups, non-discrimination against fields of endeavor in which used, and distribution of license. License must as far as possible be technology-neutral, and must not be specific to a product or restrict other software and license (Open Source Initiative, 2015). The term 'Integrated' refers to the capability of a system to share data among its modules. An integrated library system (ILS) generally consists of basic modules such as acquisition, cataloguing, circulation, OPAC, administration, and serials control to perform the housekeeping operations of a library effectively and accurately. ILS can also be considered to be an information management and retrieval system designed to perform the housekeeping operations of a library. According to Bilal, an ILS as a computer-based information system comprising interrelated components or entities and subcomponents that are designed to interact together to perform specific task, functions, and operations and achieve a specific purpose (Bilal, 2014). The movement towards OSILS started when libraries recognized it as an economically viable solution to offer improved functionalities over their legacy proprietary/commercial ILS. Libraries using in-house ILS even created 'hybrid ILS' combining the technology of open source with the support of commercial vendors. OSILS lowers the direct financial commitments of the library in terms of the software purchase/acquisition and annual license fees, which are considered to be the driving force behind its adoption in Indian libraries.

Objectives of the Study

The main objective of the study is to assess the community acceptance of OSILS in Indian libraries. Other objectives are as follows

- To investigate the rate of adoption of OSILS in Indian libraries

- To discuss the attitude and perceptions of library community towards adopting an OSILS
- To examine the challenges confronted by the proprietary software users and the advantages reveled by OSILS users on adopting OSILS
- To furnish some recommendations to enhance the rate of adoption of OSILS among Indian libraries

Methodology

An online survey was conducted using a structured questionnaire to collect views of library professionals on OSILS adoption in Indian libraries. Primary details on library automation process of selected institutions were collected through websites and other literature on ILS. The questionnaire was distributed via e- mail, post and personal means to the libraries. The geographical coverage of the study was limited to Indian libraries. Random sampling method was followed and the sample libraries selected were those using any of the ILS package. The sample was limited to the responses of only those who had responded to the questionnaire from India. Collected data was tabulated and analyzed using Microsoft Excel.

Scope and Limitations

Application of software packages for various operations plays a crucial role in libraries in performing its day to day activities. However, the research study was focused only on ILS automating the house keeping operations of the library. Though there are many ILS in both commercial and OS stream, present study used the responses of only those who had responded to the questionnaire from India. As the research study focused on ILS, the importance was given to collect maximum details on both open source and commercial software. The ILS used in India, evaluation of attitude of Indian LIS community towards OSILS and related problems in Indian context form the scope of this study. The selected ILS for the study may be in use worldwide and may have different versions; but they were not under the scope of this study. Hence the present study is limited to the versions of the packages used in India.

Earlier Studies

There are many studies on library automation at international and national levels. But, all the results derived from the previous studies have become technologically not very helpful to match with the present scenario due to the rapid technological obsolescence. The developments that occurred during the last two decades were tremendous and ICT has brought great changes in way of functioning by incorporating innovative technological applications in information handling, which was still at infancy in the beginning of nineties. At present, there are more than seventy software solutions for ILS used in Indian libraries. Numerous OSS packages for library management are also being provided by national and international organizations.

Many libraries in India are moving to OSILS due to their perceived advantages over commercial ILS systems vendors. Puckett states that open source is typically designed with open standards in mind where the creators of commercial software have a vested interest in preventing their data from being easily used in other programs because the availability of other options represents a threat to their profit (Puckett, 2012). To manage different kinds of information and resources and to deal with the local requirements, libraries require sophisticated, highly qualitative and customized ILS. ILS software can be a huge expense for libraries, so it is not a surprise that libraries would be interested in the opportunity to obtain an open source system for free when some proprietary packages can cost anywhere from tens to hundreds of thousands of dollars

(Eyler, 2003). Salter states that functionality and flexibility are key elements in a successful ILS (Salter, 2003). Many of the automation software packages were designed long before the advent of the World Wide Web; hence they lack many features of a typical ILS. However an ILS is a complex, multi-module beast, making it exceedingly difficult to distinguish between one ILS and another. Further, many of the software packages do not support next generation technologies due to the lack of continuous updating. Some have one or two installations in institutions where the system is not alive. There is always the danger of the new integrated package being rejected by the libraries as being inefficient or as not being sufficient to meet the library's demands (Foote, 2010).

Open source movement is a phenomenon that is affecting the foundations of software industry and is gaining momentum in Indian libraries for the last two decades. According to Amollo, despite its fast growth and penetration in all sectors, OSS is yet to find its optimal place in libraries, particularly libraries in the developing countries (Amollo, 2013). Though OSS breaks many limitations of commercial packages, it provides many challenges for planning, since their code itself will be worked on by different programmers and evolved over time. Open source can also improve library's freedom by reducing their reliance on vendors, and allowing them to make their systems what they actually need them to be, rather than what the vendor will provide them (Johnson, 2008).

Development of OSILS is a boon for libraries experiencing budget shortfall to cope with the exorbitant cost of the proprietary software both for its purchase and maintenance. Customization of the software to meet the individual requirement of the library and the freedom to run, modify, improve and distribute freely attract the libraries to adopt OSILS. Migrating to an OSILS from commercial or proprietary software is a great way to cut the expenses. Exporting the existing bibliographic data into a standard format, or directly to the selected OSILS which is to be supported by the software, is a basic requirement before migrating to an OSILS. Travis pointed out that OSILS systems are still young relative to the long-established commercial systems, but their functional capabilities and their established base are growing (Travis, 2009). Application of software packages for various operations plays a crucial role in libraries in performing its daily activities. The libraries are the great beneficiaries of the OSS technology especially when it comes to the automation of housekeeping operations.

Implementation or adoption of OSILS requires a systematic approach. It is always advisable to have a pilot or feasibility study of the software or considering the experience of the similar library, which has already undergone the process; before starting implementation. Selecting the right software for an organization or institution such as the library could be a challenging task considering the fact that organizations adopt these technologies with the aim of increasing their productivity, addressing operational challenges, increasing their level of competitiveness and reducing their cost of operation (Ngozi Et.al, 2014). OSILS is a welcome solution for libraries operating with low budget, which helps to cut down the cost involved in the purchase, installation and customization of high price of commercial software. The factors associated with the successful adoption of free/open source applications include the match with an organization's culture, technical infrastructure, staff skills, software functionality, and the extent of community support available (Chawner, 2004). Osaniyi opines that several library management software have thrived with much patronage, most of the software have failed resulting in waste of time, fund, and energy (Osaniyi, 2010). Since no library software applications are perfect, libraries might benefit from

leveraging some of the OSS tools that are becoming more available, more common with a growing user community (Wallis and Kroski, 2009). Many libraries in India are either adopting directly or migrating from their legacy closed source ILS to an OSILS. Poor support, limited flexibility, lack of interest in new developments, as well as the high cost of the initial implementation, annual license and support charges are the general reasons why people migrate from commercial to OSS (Bissels, 2008). OSILS offer many functional and practical advantages, including potential answers to some of the issues currently frustrating libraries (Jaffe and Careaga, 2007).

Analysis and Findings

The study 520 libraries of coming under different categories like academic, research, public and special libraries. Rate of Adoption of OSILS in these libaries and the attitude of library and information science professionals towards OSILS in India as revealed by the survey, and challenges confronted by the proprietary software in comparison with the advantages of OSILS identified from experience of sample population are summarized in the following three sections.

Rate of Adoption of OSILS in India

The study conducted among different types of libraries such as academic, research, public and special libraries found that 59% of them currently use commercial/proprietary software and 26% were using open source for library automation. Among the remaining 15% some libraries have custom or tailor made software and are collectively represented as 'in-house'. Figure 1 diagrammatically represents the type of software used by the respondents.

The data collected revealed that the response rate is comparatively less for libraries using OSS for library automation against commercial/proprietary packages. It indicates that the rate of adoption of OSILS is limited

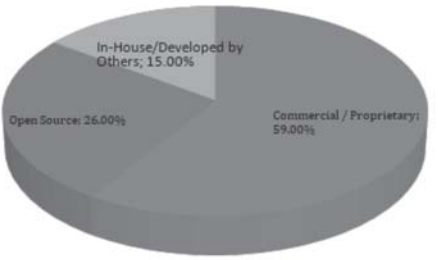

Figure 1: Type of Software Being Used

in Indian libraries and is less than half of the total libraries using commercial/ proprietary packages. This may include the libraries, which initially adopted commercial software, and unwillingness of either parent organizations or librarians to adopt change might have caused it to move on with legacy proprietary solutions. The success of adopting any ILS basically depends upon the attitude of the library professionals and adequacy of technical manpower. It is true that there should be a dedicated and enthusiastic team of library staff with adequate literacy in computer applications for a successful library automation process. Regular constructive communication among the staff and support from the in-house technical expert are very essential constituents of planning-implementation-review cycle for a library intending to install and maintain the software on their own. Staff involvement will make things more reliable as every step of installation and maintenance involves the library staffs that actually carry out the work. There seems to be an opinion among Indian LIS community that the responsibility of planning and maintenance of OSILS, which would turn into a burden eventually, has hindered the wider adoption of OSILS. Unlike open source, commercial ILS are finished products and distributed without much changes over time and will be static in regard to those who have once purchased it and there is no control over the evaluation process. Professionals recognized the advantages of OSILS adoption in libraries as the software is available for zero cost to adopt in an uncomplicated way and which

also facilitates customization according to the local requirements with less or no cost.

Perceptions of Library Community on OSILS

It is clear from the analysis that 95% of the total respondents have knowledge of OSILS, which is an evidence of its awareness spreading among the Indian library community. Perceptions of the respondents in adopting OSILS in Indian libraries reveals that 15% of the total respondents consider lack of sufficient technical knowledge to install and maintain the OSILS as the major challenge in adopting OSILS. This was followed by issues such as shortage of skilled manpower to install and maintain the software and lack of technical support (12%). Lack of promotional activities (9%) is another major concern to adopt OSILS. 'The more vigorous product promotion, the more will be the interest generated among the customers' which is followed by choice of ILS. The other common challenges represented by the respondents with equal importance are lack of vendor support, issues of data security, lack of organization policies (7%), issues of software security and reliability and longevity (6%), lack of high quality documentation and availability of commercial software (5%). It was found that OSILS has adequate community support and rich in major functional features and modules and only 4% responses mentioned lack of community support or lack of major functional features and modules (Fig 2).

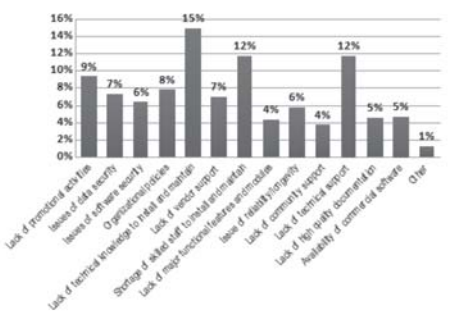

Figure 2: Issues with Adoption of OSILS

Challenges and Advantages

Challenges confronted by the proprietary software users and the advantages reveled by OSILS users on adopting OSILS

There are various reasons indicated by different experts, on what hinders the professionals in adopting OSILS. The opinions from the experts knock on different prime dimensions of present library scenario of India.

- Our education system unfortunately is not equipping students with the necessary skill sets and knowledge required to handle OSS.
- It is a psychological fear factor. Use of Linux has not become very common. GUI flavors are yet to become more commonly used by all.
- Technophobia' where responsibility that may turn into a burden at times and changing the mindset that has been adjusted to commercial software.

The major reasons represented by most of the experts are lack of technical/trained manpower as well as confidence, Weakness of top library authority in decision making process, perception of lack of maturity, lack of awareness, lack of training, lack of hardware, lack of expertise, lack of expert manpower to handle and troubleshoot OSILS, lack of technical support etc. This directly relates to LIS education system in India in the changing phase of information business. The librarians who used to maintain manual records decades ago, is now at the juncture that needs one to learn the programming level of software. Though it appears to be an imposition on LIS community, the need of the day induces the curriculum to be extending its horizon with every advent of information technology. With LIS being a multi dimensional subject, there is always a gap that needs to be filled.

The study found that lacking experience with open source tools, continued reliance on

proprietary ILS, low adoption of OSILS, organizational change etc. affect the visibility of OSILS in libraries and points out that without fundamental changes in our ability to innovate, or even respond to innovation, libraries risk becoming even more marginal. Lack of confidence, knowledge and proficiency in the application of OSILS and lack of taking initiatives and attaining self-reliance are the common reasons among professionals for continuing with their legacy proprietary systems.

OSILS : An Unique Solution

Several commercial library automation packages are now available. But their costs are beyond the reach of most of the libraries. Even if libraries can afford these packages, the invisible costs and the control of the source code by the software vendors, curtails the freedom of customization. In this scenario, OSS is crucial for Indian libraries to organize, maintain and disseminate the information in the traditional environment as well as in modern environment specifically over the web regardless of the documents they hold, with zero investment for software as well as zero recurring cost for its maintenance and up-gradation. There is no lacuna in understanding the benefits of using OSILS in Indian libraries and a higher majority of the respondents have supported the adoption. Libraries are often feeling the stress of limited budget to purchase and maintain commercial software considering adaptability as well as flexibility of OSILS. Supporting and adopting OSILS reduces the stress on financial pressure of the library and enhances the confidence in customizing the software. Even with less technical knowledge staff and minimum available infrastructure, libraries are managing to incorporate OSILS in a cost effective manner.

Public libraries in India are generally categorized under poorly funded organizations. It is also understood from the study that many libraries, especially public and school libraries lack quality automation systems due to high cost of commercial packages and the inability to make use of OSILS. OSS based automation initiatives provide an innovative approach for economically viable solution for automation. These libraries need to be made aware of the advantages of implementing OSILS. In order to meet the information needs of the users efficiently, library professionals should have the ability to install, maintain and customize the software according to their local requirements. However, it is seen that the level of technical knowledge required for LIS professionals to install and maintain OSILS is comparatively less in school and public libraries.

As Koha OSILS is universally accepted by LIS community for library automation, the effort towards the 'single window access' needs to be initiated to facilitate automation of libraries with weak infrastructure by the national agency of the Government of India. There should also be mechanism to interconnect the libraries of these kinds to create Union catalogue and to integrate the bibliographic details so that the entry in the database for similar collection could be easy.

Further design, development, customization and implementation of the software also need to be supported by the Government authority. A single agency consisting of library professionals and technical experts may be formed to understand the needs and address possible issues, which over a period of time bring certainty in professional practice.

It is well known that infrastructure in most Indian libraries is limited by many factors, e.g., power failures, poor or unreliable client and server hardware, poor Internet speeds, inadequately trained staff etc. Solutions for such situations need to be to be put in place while considering the application of OSILS.

Issues like lack of confidence in changing the existing proprietary software, difficulties in maintaining OSILS, lack of support from

vendors and community, lack of in-house technical expertise, complex installation procedures of OSILS, lack of reliability and motivation from the management and organizational policies, experience and training and sufficient manpower etc. needs to be resolved with priority.

It is vital for library professionals to learn OSS related skills and gain skills on the implementation and customization of the software being used in their library, which can substantially reduce the cost of hiring external expertise. Application of OSILS should be part of the academic curriculum so as to enable the students to acclimatize to the open source environment right from the beginning.

Study indicates that there is a progressive growth of number of workshops, training programs, conferences, seminars and creation of user groups and forums to promote the awareness on OSILS in Indian libraries, which motivates the professionals to adopt or migrate to OSILS.

Users of the software have the experience to write documentation about installation and maintenance. However, considering their level of knowledge in software code, programming language etc., a team of both library as well as software experts joining together will help enhance the quality of documentation even for technically less experienced professionals to understand and adopt OSILS without much effort. Motivation of library professionals to take initiative to learn and gain knowledge on OSILS and taking ownership of managing them on their own after certain training would be helpful. The library professionals need to initiate campaigns to make aware the education, research and private institutions of cost involved in big price ILSs which could be utilized to acquire more information resources, the most significant requirement in a shrinking budget environment.

The respondents suggested a variety of reasons for the slow adoption of OSILS in India which includes technical ability required to install the software, modify its source code and carry out maintenance, issues with technical support, data and software security, skilled staff, lack of promotional activities, poor documentation. They state that computer is only an extension of human brain's functions of data processing and its manipulation by machines. So human being/staff is the most important component of an automated system. They need to be trained and proficient to work with all the important components of the system (Raman, 1992). This is very relevant in OSILS environment. The issues compel professionals to depend on commercial agencies or community organizations, which involve a cost factor. Communicating the benefits and limitations of an OSILS in its functionalities and features compared to its commercial counterparts to the less technically experienced is also a challenging task for librarians if they are not concerned about the cost factor. It is clear from the responses that there are issues that need to be seriously addressed in the context of adoption of OSILS, which can help the professionals to consider the OSILS rather than a risky alternative.

Conclusion

OSILS is an indicator of the practice of liberalization in the information world. Genuine efforts are being made to bring the automation technology to most of the local libraries with minimal or no cost. OSILS are being instrumental in bridging the digital gap in Indian information sector. Due to unavailability of technology when there was no OSILS, some libraries have made their ways with proprietary packages for a considerably long time. However, the recent developments in the related fields are more promising for a wide adoptability of OSILS in the years to come. The current momentum of OSILS adoption as an alternative to

commercial ILS products shows its acceptance and recognition among Indian libraries. An OSILS succeeds in its journey when it has smoother installation processes, lower technical barriers and exhaustive documentation available on public domain. Both the user and the developer communities associated with the progressions of software play a pivotal role in its long-term sustainability. Further, systematic implementation plan needs to be followed by the libraries intending to adopt the software. In the near future, libraries using paid software will migrate to OSILS to join the community that would grow to be of enormous in size. The advent of various technologies and their availability in the public domain free of cost makes library automation inexpensive, fast and more effective than ever.

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