

Open Source Movement in Indian Libraries: An Analytical Study

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The entry of an Open Source Software (OSS) into the library world creates new opportunities in the organization and management of information. Now, the librarians are taking great advantage of OSS for empowering their libraries with new tools and technologies for acquiring, organizing and disseminating information more efficiently and effectively. This paper provides a basic idea on OSS, and examines how Indian libraries are using different open source tools in library applications, such as building institutional repository, digital library, content management, website building, library automation and other web based services. Further, the paper highlights major open source software used in Indian libraries and tries to depict their problems and prospects.

Key words: Open source Software, Content Management Software, Library Automation Software, Indian Libraries

Introduction

One of the most powerful movements in the information communication technology which justifies the means and value of libraries in the contemporary library world is Open Source Software. In electronic environment of 21st century, "Open Access" is the *mantra* for library and information science professionals and the forces that make it possible are 'Open Source Software (OSS)' and 'open standard platform'. OSS has its own pros and cons but its wide spread use in library fields making its use more tangible. Libraries of all kinds and sizes have begun to realize that, OSS can make their existence possible in this abstract world to provide more user friendly services to their end users in least possible time. "Information is power" and the librarians being the facilitator of information can take the benefit of OSS with latest technology and tool to provide world class services to their users. As a distributor of knowledge and from a discipline that traditionally has been "for the people", librarians should be at the forefront of OSS revolution.

Dr. A. P. J. Abdul Kalam, the former President of India, in his speech during the dedication ceremony of the International Institute of Information Technology at Pune strongly advocated for broader adoption of OSS. He said OSS offers the developing nations such as India the best opportunity to modernize. He was disappointed with the fact that India still seems to believe in proprietary software (Becker; 2003). Recently, in a workshop, a Committee appointed by the National Knowledge Commission recommended that, libraries in India should be encouraged to adopt OSS, which is open standard compliant, thereby facilitating open access to information.

OSS: The Concept

Open Source Software (OSS) can be defined as a computer software whose source code is available under a copyright license that permit the users to study, change improve the software, and to redistribute the same in a modified or unmodified form. Open source software does not mean only access to the source code and modified source code.

The Open Source Initiative [<http://www.opensource.org/docs/osd>] has developed definition for open source software. According to this definition, an OSS possesses the following key elements.

- *Free redistribution:* Open source software can sold or given away and does not require a royalty or fee.
- *Source code:* The program's source code and compile code should be easily accessible.
- *Derived works:* Modifications and derived works must be allowed, and these modifications can freely distribute.
The Integrity of the Author's source code: The license can require that modifications be uniquely identified and kept separate from the original base software.
- *No discrimination* against person or group.
- *Distribution of license:* Additional licensees are not required as the software is redistributed.
- *License must not be specific to a product.* Use of an open source program cannot be dependent on use of other software.
- *License must not restrict other software.* The license of open source software cannot place restriction on other software.
- The license must be *technology neutral*. No provision of the license may be predicated on any individual technology or style of interface.

The foregoing inherent ingredients of an OSS clearly reveal that, it encourages a collaborative method of developing and distributing software, rather than restricts the flow of software development to be simply developer-to-user. The original developer encourages the improvement and developing by giving all users, complete and equal access to the program, and hence an internal user can become the developer and a developer becomes the user. Open source allow more people to contribute their skills and interest to the creation of better software and products.

Proprietary to Open Source: A Paradigm Shift

The open source has perhaps, without conscious intent created a new and surprisingly successful paradigm shift from proprietary software to open source software. In order to understand the issue involved in open source approach, it is necessary to understand the laws associated with it. The contrasting concept underlying these two paradigms is shown in this table to make the concept clearer.

Table-1. Traditional Vs Open Source Approach

(Neus and Scherf, IBM System Journal, 2005)

Traditional Approach	Open Source Approach
(Brooks law)	(Linus Law)
Hierarchy	Network
Experts	Peers
Teams	Communities
Cathedral	Bazaar
Perfection	Improvements
Construction	Evolution

The above table reveals the features of traditional approach and open source approach. Open source is the today's world approach which stresses upon innovation, collaborative development and sharing of knowledge. Open source means opening the door and OSS is in the forefront of this approach. The successful realization of this approach is depended not only on the emerging information technology but also on every individual throughout the value chain of an organization from management to knowledge worker to suppliers to customer and partners.

Key Advantages of OSS

OSS movement sees openness as a benefit and the prospect of an open ended community having access its code is a gain rather than a concern. Most of the organizations have moved towards open source owing to its quality, reliability; license free, teamwork, continuous experiment and new advancement. By and large, the usability of OSS can be seen from lower level management to higher one. Many critics and software specialist view OSS as "environment friendly" because it's compatible to any situation, size, structure and type of library providing cost-effective solution. Thus, some of the key advantage her enumerated as follows:

Cost Effectiveness

Shrinking budget is continued as a great crisis for the organizations. In this crucial situation OSS has great impact to empower the users in 21st century since this software is totally license free. OSS not only has a lower acquisition cost than proprietary software, but also it often has lower implementation and support costs as well (Tan Meng; 2002; p 14 -16).

Availability of Source Code

The availability of the source code for OSS systems has made it easier for developers and users to discover and fix vulnerabilities, often before a flaw can be exploited. Any

alternation or modification can be done by the user according to their suitability. It also helps the user communities for any number of experiments till the satisfaction is reached. OSS, which encourages free modification and redistribution, is easy to obtain, use and learn.

Open Standards and Vendor Independence

Open standards give users, whether individuals or governments, flexibility and the freedom to switch between different software packages, platforms and vendors. Open source usually uses open format for team working and sharing the files. In case of proprietary software, secret standards lock users into using software only from one vendor (Kenneth Wong ; 2004; page 12-16.).

Reduced Maintenance Costs

Maintenance of any software package can often become equal or exceeds the cost of initial Software's development. It becomes very difficult for any single organization to bear complete cost. However, with the OSS development model, maintenance costs can be shared among the thousands of potential users on software application, reducing per-organization costs.

Better Quality Control

OSS developers often find that users with access to the source code not only report problems but also pinpoint the exact cause and, in some cases, supply the fixes. This greatly reduces development and quality control. Availability of source code helps the user to ratify the error and to fix the problem faster and with great reliability.

Localization

Localization is one of the areas where OSS shines because of its open nature. Libraries are able to modify OSS to suit the unique requirements of a particular cultural region, regardless of its economic status and size.

Legally Free

Piracy is seen as a key debate and issue in electronic age which is completely an offensive in context of copyright and IPR environment. In this crucial context, OSS is just an incentives or package to avail this right to establish different software for creation and maintenance of their own library. Software's like E-print, D-space, GSDL, Content DM, Koha, and now NewGenLib from India are playing major role to adopt the same.

Easy Evaluation

It is easier to evaluate open source software then proprietary software. Since open source software is typically freely available to download, Librarians and Systems Administrator can install complete production-ready versions of software and can evaluate the competing packages.

Open Source and Libraries: The Principles and Philosophy

The principles and philosophy which have brought OSS and libraries into one platform include the following:

- Both have the philosophy of sharing information freely with no restrictions on use or redistribution;
- In terms of user satisfaction, both libraries and the open source movement represent cultures of collaboration and problem solving to fulfill internal (staff) and external (patron) needs;
- Both communities depend on human interaction to improve their respective services;
- Open access is the main philosophy behind both libraries and open source software and both are working for open standard also;

Above all the five laws of library science enunciated by Dr. Ranganathan sufficiently emphasize the use factor of library resources to its optimal extent. The first law "Books are for Use" in present context means "resources are for use" is happening due to interoperability in open source software, like GSDL, Dspace, Eprints using open standard like, OAI-PMH.

Open Source Library System in India

India is one of the most progressive and developing countries in the world. Software has been targeted as a growth sector in India. Almost all major IT players in the world have set up subsidiaries or collaborations in India. The major attraction was an "abundance of technically qualified and cheap software manpower". In spite of all these facts, more than half of the libraries in India lack in implementing Information Technologies in their operations and services. Procurement of Software for various library applications has been very crucial since it involves a huge cost. As a result only a few libraries in India so far have been automated on a limited scale using proprietary software for their library management.

Use of Open Source Digital Library Software

There is greater Scope for OSS in Indian libraries. The open source movement has already begun in Indian libraries and has spread over libraries of all kinds and all sizes. In India, OSS has been implemented in libraries mainly for automated management, development of digital libraries, institutional repositories, developing library websites, etc. In the case of Digital library software, a good numbers of libraries have implemented the same using Greenstone Digital Library Software produced by the New Zealand Digital Library Project. Institutions like Archieve of Indian Labour, Indian Institute of Management, Kozhikode, Electronic Thesis and Dissertation of IIT, Bombay are using

Greenstone for developing their digital libraries. Another frontier in OSS development in India is Institutional Repository (IR) for which open source software like Dspace and Eprints have significant market in India. Dspace [<http://www.dspace.org/>] is an institutional repository software developed in collaboration of MIT ((Massachusetts Institute of Technology) and HP. Dspace is used by more than 20 institution in India as on the list of Registry of Open Access Repository (ROAR) [<http://roar.eprints.org/>]. Indian Institute of Technology, Delhi, Raman Research Institute, Bangalore, National Institute of Technology, Rourkela, National Institute of Oceanography and Indian Institute of Technology, Kanpur are few of them. Eprints is institutional repository software like Dspace developed at the School of Electronic and Computer Science, University of Southampton, UK (<http://www.eprints.org/>). Indian Institute of Science, Bangalore (the largest repository in term of collection, unto 11752 research materials mostly peer reviewed), National Centre of Catalysis Research (IIT), OpenMED@NIC (archive of Medical and Allied Science) are a few of the institutions among 11 institutions using Eprints for their Institutional Repository. A detail list of institutions in India using OSS for the creation of digital libraries and or institutional repositories have been appended (Appendix-1 & 2) at the end of this paper.

Use of Open Source Integrated Library Software

Apart from these Institutional Repository and Digital Library Software, there are other OSS used by Indian libraries like Library Automation and Management Softwares (Koha and NewGenLib) and Content Management Tool (Joomla, Drupal). Koha (<http://www.koha.org/>) is the first open source integrated library system in the world use by a number of academic, public and special library in the world. As per the list available in the official website of Koha, more than 13 libraries in India have been using Koha. Recently, Delhi Public Library used koha 3.0.0 for their library automations, and the online catalogue is available to the entire user. Another landmark in Koha development in India is declaration of Kerala government to automate all government libraries with Koha. NewGenLib is developed by joint cooperation from two charitable trusts, Kesavan Institute of Information and Knowledge Management (KIIKM) and Versus Solution Pvt. Limited. It was first made as a proprietary software but latter declare as OSS under GNU General Public License. It used in 122 libraries in India (<http://www.verussolutions.biz/web/>).

Use of Open Source Content Management Software

For content management and website creation there are two most widely used software tool one is *Joomla* and another is *Drupal*. *Joomla* is a award winning content management systems which enable library to build theirs own website with powerful online application. Vikram Sarabhai Library, Indian Institute of Management [<http://www.iimahd.ernet.in/>]

library/] and Central Library IIT, Bombay [<http://www.library.iitb.ac.in/>] are using *Joomla* for their library website. These are the major open source tool used in Indian libraries. However, there are other OSS tools, which are used in day to day work of libraries.

OSS Knowledge Base in India

In the past couple of years, a number of workshops, conferences, training programmes, are being organizing by different institutions in India for popularizing open source software in Indian libraries. A large number of professionals have been trained by the process and they are using the knowledge locally in their respective libraries. A few institutions deserve mention for creating a knowledge base on OSS are Library Association (ILA), Indian Association of Special Library and Information Centre (IASLIC), Society for the Advancement of Library and Information Science (SALIS), Information and Library Network (INFLIBNET), Developing Libraries Network (DELNET), Institution like Documentation Research and Training Centre (DRTC), Indian Institute of Management, Kozhikode, etc. Indian Institute of Management, Kozhikode is providing support for South Asia region for creating digital library. The support group will help in promoting greenstone digital library software in South Asia region (<http://greenstonesupport.iimk.ac.in/>). NewGenLib is an open source library automation system developed in India. It was first of it's from a developing country like India's a major contribution to open source development. It has been adopted by about 122 libraries primarily in India, but with some from Syria, Sudan and Cambodia. In the same time Library Schools also adopting Open Source Software and Open Access in to their syllabus both in theory and practice.

Benefits of OSS to Indian libraries

- It is empowering Indian libraries in the cutting edge of library budget due to its low startup cost associated with building a library system.
- Libraries of all kinds and sizes in India are using open source solutions like Koha, NewGenLib, Library Manager, digital library software like to easily maintain their library collection with these software.
The increasing use of OSS has boosted the Open access *mantra* to be realized even in the not-so-well type of libraries in India.
- Its will create opportunities for the Indian libraries to maintain their local variations by using OSS.
- OSS allows the libraries to use only what they want and to avoid unnecessary complications in the system.
- Establishment of library open source resource sharing network will allow more libraries to provide high quality electronic services.

Limitations

- Most of the library professionals are not equipped with sound IT skills.
- Myth on open source software that the source code is open so information will be hacked by the hacker.
- May be initial cost is zero, supporting the software over lifetime may involve considerable cost, and organization may find difficult to estimate these cost when software is initially adopted.
- Unlike proprietary software, there is no customer support service, there is no vendor to complain, and this could make it harder to ensure improvements.

Conclusion

Open source sounds idealistic and impractical to many. However, there is ample evidence to suggest that such efforts, building on the pride and technical egos of good programmers, have succeeded in building some of the best software in the world. Today, open source programs such as Apache (web server), Linux (operating system), Netscape (web browser), and Sendmail (mail transport) are the dominant products in their categories with over 10 million copies in use for each (Shah, 1998). This demonstrates that open source is a viable strategy for obtaining high quality, high volume solutions to complex problems. There are a lot of scopes for Indian libraries in general and small libraries in particular where lack of budgetary provisions, Staff shortage and other problem in manual form are major challenges. In the face of these obstacles, Open Source tools and techniques provides an opportunity to develop techie libraries and to provide a state-of-the-art services to their user. In India, there are quite a good number of open source installations have been made and the library professionals are continuously being aware about the availability and use of these tools. This indicates that there lies a vast scope for the open source movement in India for future libraries. However, OSS needs a well planned direction, standard practices, appropriate policies and legislations for its growth in Indian Libraries.

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