OPEN SOURCE LIBRARY MANAGEMENT SOFTWARE: AN EVALUATIVE STUDY

An abstract
Nowadays open source software are widely accepted by libraries, as everyone knows power of openness and the power of collaboration. Open source software has opened up new vistas in the arena of library automation. The development of free and open source software for libraries started around 1999. Some of initially developed software for libraries are Prospero, JAKE, MyLibrary, LOCKSS, Openbook, Koha, etc. Since 1999, there have been continuous developments in library related open source software. As on today there are number of open source software are available for libraries such as, digital library software, e resource management systems, discovery layers, library management systems, federated searching software, link resolver, indexing & searching software etc.

The development of the first open source library management system, Koha was started in the year 1999. Since that time number of open source library management systems have been developed and shown sustained development of features and significant innovations. Now these systems present reliable and credible options for almost all types of libraries.

During the last decade there are major transformations like libraries are shifting from proprietary LMSs to the open source LMSs and changes in the acquisition policy i.e. great shift in acquisition of library collections. Libraries are acquiring more and more electronic collections. Most of the libraries are still using old library management systems which have no effective functionality to manage the electronic and digital collection. In order to overcome such and other challenges the next generation library management systems have been developed and some are under development.

Need of the study and statement of problem
In the market many commercial products are available. However, many institutions may not be able to afford the cost of using commercial products. Therefore nowadays there is increase in demand for open-source software as total cost of ownership is lower than proprietary software and also provides improved and better program functionality. Presently there are number of open source LMSs are available and there is continuation addition of new systems and frequent addition of new feature in existing systems. Therefore there is need of depth evaluative study on currently available open source LMSs, for selection of suitable software and implementation of the same in library. This
study will be useful for library policy makers, interested in acquiring an open source LMSs for their institution. This study will also help them to improve the efficiency of the decision-making process with regards to selection of best open source LMS solution for their library. Therefore it is felt that there is need of separate study to understand and assess the current status of the presently available open source library management systems. Hence the proposal titled “Open Source Library Management Software: An Evaluative Study” is undertaken for the study.

**Objectives**

The goal of this research is to study of open source library management systems and evaluate those systems using appropriate criteria. This study was undertaken with the following major objectives.

- To conduct survey of open source library management systems.
- To study open source library management system projects.
- To develop the model for evaluation of open source library management systems.
- To install selected open source library management systems in test bed environment for evaluation.
- To evaluate open source library management systems using developed model.
- To identify the problems and suggest model for next generation library management system.

**Scope and limitations of the study**

This study covers study of open source library management systems/integrated library systems and not the other library related software. In this study the criteria for selection open source library management systems is as follows

- The Library management systems should be available for download via free or open source license
- The Library management systems should be available in English language
- Library management systems should be currently active.
- The Library management systems should support basic housekeeping operations
- The study is limited to current stable version of the library management software released on or before February 2015.
Hypothesis

- E resource management module has been incorporated in most of the presently available traditional open source library management systems.
- Almost all presently available open source library management systems have not yet fully moved to next generation of library management system.

Research Procedure

This study has used evaluative method. As on today number of open source library management systems are available. In order to find presently available open source library management systems, an extensive survey of open source LMSs is carried out and list of these systems with basic and technical details is made.

Sustainability is one of the important aspects of the open source software. Therefore the present developmental status of all LMSs found under the survey are studied and examined using Schedwik, English methodology and suitable methodology developed for this purpose and the status of all systems is determined.

As per the selection criteria mentioned in scope and limitation section, out of thirty one LMSs eight Library management systems such as ABCD, Evergreen, Koha, Kuali OLE, NewGenLiib, Next-L Enju, PMB, SLiMS are selected for depth study and latest stable versions of these systems are installed in test bed environment.

There are number of studies and models are available on evaluation aspect of open source software. Each model provides various criteria for evaluation open source software related aspects. However these models are generic in nature and not for particular kind of open source software therefore individual software related functionality evaluation criteria are not included in those models, as the functionality features differ from software to software. Therefore on the basis of analysis of the present literature and discussion with the experts an evaluation model for library management systems is developed covering functionality aspect of LMS and extensive open source software related aspects.

In this model evaluation criteria are divided in to two groups, first one is functionality group which contains functionality related evaluation criteria and second group contains open source software related evaluation criteria. In functionality related group the functional feature are grouped into module and in each module they are group into categories. Each category is assigned weight as per importance and finally accessed on five point scale. The group B consists of assessment categories/elements such as
community, documentation, support, training, usability, as-is utility, longevity, release activity, roadmap, project website, installed base, license, professionalism, quality, performance scalability, security, and satisfaction.

**Finding**

- This study has identified thirty one open source library management systems (LMSs) which were developed during 1999-2014.
- Out of thirty one LMSs projects only twenty LMSs projects have succeeded to pass “success in growth” phase.
- The study also shows that out of total thirty one LMSs projects only fifteen LMSs projects are presently active. Almost all the remaining projects became inactive or abandoned within short period after their initial release mostly in growth phase.
- Sixty percent of the active projects have intuitionial/organizational support. Projects with intuitionial / organizational support have shown very good development activity.
- Almost all Library management systems multilingual i.e. the interface is available in more than one language languages.
- Now in the field of library and information science different types of open source projects are available such as foundation/institution based open source projects, community based open source projects, vendor led open source projects and some cases combination of these.

**-Functionality aspects.**

- This study shows that in case of basic traditional functions (acquisition, cataloguing, circulation, serial control, reporting, and OPAC) there is very little variation in the total score obtained by Evergreen (78.83%), Koha (78.07%), and NewGenLib (77.02%). This shows that Evergreen, Koha and NewGenLib have equally comparable functionality. PMB (67.39%), ABCD (54.21) and Kuali OLE (52.56%) are on fourth, fifth and sixth positions respectively. SLiMS is on seventh position with 46.04 percent.
- Koha is the top LMS in the overall functionality i.e. traditional as well as next generation functionality, with 56.01%. NewGenLib is on second position with 52.13%. PMB (49.98%) and Evergreen (49.53%) occupy third and fourth position respectively. However very negligible difference (0.45%) in total score
obtained by both systems. The Kuali OLE and ABCD are on fifth and six rank with 40.55% and 38.45% respectively. SLiMS is on seventh rank with 32.24 percent.

- The E resource management module has not yet been incorporated in all system except Kuali OLE.
- There is much more room for development of serial control module of all LMSs except NewGenLib.
- Almost all LMSs have incorporated next generation feature in their OPACs.
- Functionality to manage digital collection has not been incorporated in fifty percentages of LMSs.
- Koha, Evergreen, NewGenLib, PMB and Kuali OLE are suitable LMSs for university library. Kuali OLE is the most appropriate as it is especially developed for academic and research libraries and it has e-resource management functionality. However, the system is under development it will take some more time to completely mature.
- The LMSs such as Koha, Evergreen, NewGenLib, and PMB are better and equally comparable to available commercial software. However the adoption rate in libraries is very slow as compared to expected.
- All LMSs have incorporated the essential standards such as MARC/UNIMARC, Z39.50.
- Library professionals are expecting new generation library management system from a long time but library management systems have not moved to this direction except Kuali OLE.

- **Open source software projects aspects**

- Evergreen (93.75%) and Koha (92.82%) occupy first and second position respectively in software related aspect category, however, there is very little variation (0.93) in the total score obtained by these two LMSs. The total score of these two LMSs under this category is more than 90 percent, this indicates that both LMSs incorporates the open source software practices very well. The Kuali OLE is on third position in this category with 79.39% score. PMB and SLiMS are on fourth and fifth position with 73.84% and 69.67% respectively. NewGenLib and ABCD are on sixth and seventh position with 65.74% and 62.73% respectively.
• Community activity, documentation of the Evergreen and Koha are excellent among all software.

• Koha and PMB have highest longevity among all selected LMSs, this indicates seniority and maturity of both LMSs.

• Koha has very strong developers community and longevity but till this date it has not yet moved to full fledged next generation library management system.

• Professional support for all the selected software is available; however, Koha has strong worldwide professional support.

• Development of Kuali OLE is started in 2010 but till this date software has not become full-fledged or complete and it is lagging behind expected scheduled.

• Presently the user documentation of NewGenLib is not updated and community activity of NewGenLib is very weak in spite of its good functional features and huge number of downloads for the software.

• All selected LMSs have maximum installed base in respective country of their origin however, Koha is worldwide accepted.

• The traditional library management systems are very slowly incorporating next generation features. There is need of more efforts to speedy move to this direction.

• No traditional library management system has incorporated e-electronic resources management module yet, in spite of increasing electronic collection and demand.

-Combined Score of functionality aspect and open source software project aspects.

• Under the combined score of both aspects i.e. functional aspect and open source software aspects Koha and Evergreen are top LMSs with 78.86 and 76.97 percent score and occupies first and second rank respectively. PMB and Kuali OLE are on third and fourth position with 65.22 and 64.66 percent score respectively however there is very little difference (0.56) in score of both LMSs. NewGenLib is on fifth position with 60.58 percent score. SLiMS and ABCD are on sixth and seventh rank with 55.47 and 52.22 percent score.

Organization of present work

The entire research study has been organized into eight chapters. The brief content of each chapter is given below
Chapter 1: Introduction
This chapter provides general information about open source library management systems, open source software, open source licenses and brief account of evaluation research. This chapter also covers need, objective, scope, methodology and characterization.

Chapter 2: Review of literature
To uncover a body of literature appropriate to the study, the researcher has consulted various types of information sources. The information published these sources have been collected evaluated and discussed in this chapter.

Chapter 3: Survey of open source library management systems
This chapter presents survey of library management systems and gives descriptive view of all open source library management systems found under the survey.

Chapter 4: Study of open source library management system projects
The chapter covers study of developmental status of all open source library management system found under the survey using appropriate methodologies.

Chapter 5: Next generation library management system
This chapter also presents overview of next generation library management system and its feature. Suggest model for next generation library management system.

Chapter 6: Model for Evaluating Open Source Library Management Systems
This chapter presents study of available open source software evaluation models and proposes new model for evaluation open source library management systems and also describes steps of proposed model.

Chapter 7: Evaluation of selected open source library management systems
This chapter presents comparative evaluation of eight selected open source systems based on evaluation model described in chapter six.

Chapter 8: Findings, suggestions and conclusion
The chapter report the findings of the study and makes suggestion.

Conclusion
During last fifteen years period, the information and communication technology has greatly affected the way of library functioning, way of giving of library services, collection development policies. Libraries become hybrid in nature and have to manage from print collection to digital to cloud based collections. However there is dominance of electronic collection. This trend directly affected library management systems. Now Library management systems have to manage print collection as well as all types of
electronic collection (local and licensed). During the last five years, the developments are started to redesign library management system. Few new generation library management systems come into existence. Another major impact of information technology is the advent of open source software in the library automation industry. The developmental initiatives for open source library management systems started in the year 1999. Now majority of libraries are moving from proprietary systems to open source systems. During this fifteen year period many open source software have been developed however very few have attained maturity and sustained for a longer time.

In the initial phase of development LMSs are not integrated and in later phase there was demand for integrated LMS. Nowadays LIS professionals taking on loosely coupled systems i.e. integrating the different systems and components using service oriented architecture.