CHAPTER 2

REVIEW OF LITERATURE

2.1 Introduction

The study demands extensive literature review to know the present state of affairs and also the scope of further development on the study area. In the age of information explosion it is impossible to cover all the literature published either in print form or in digital form. Hence, look in to the time and availability concern only some of the selected literatures have been cited in the present study. Print as well as electronic resources covering various aspects of the study area have been studied and discussed in brief. From the observation it is found that print resources on the area are limited but there is large number of electronic resources available in the Web.


The topic understudy is a very significant one and literatures found in these areas are broad in nature. Streamlining of literature is necessary in this aspect. The literature in the study area is grouped into few specific sub groups for the convenient of conducting the study systematically. The sub groups are-

- Open source software
- Open source software for Libraries and Information Centres
- Library automation in academic libraries
• Issues related to Library Management Software
• Comparison of Library Management Software packages
• Koha

The review of literature made here cited as per APA (American Psychological Association) 6th edition style with chronological order.

2.2 Open Source Software

Bretthauer (2001) in “Open Source Software: a History” discussed different issues related to open source software and traced the evolution of the open source operating systems as well as the communities which have evolved with these systems and some of the commonly-used software packages developed using the open source model. The author mentioned “The history of open source is closely tied to the history of the hacker culture, since it is largely hackers who have sustained this movement. ‘Hacker’ is used here in the sense of one who is both a skilled professional programmer and a passionate hobbyist wishing to advance computer science, rather than the definition recently used by the popular press of a destructive system cracker.”

Bonaccorsi and Rossi (2003) in the paper “Why open source software can succeed” discussed the economic problems raised by the emergence of open source- motivation, co-ordination, and diffusion. First, the movement took off through the activity of a community that did not follow profit motivations. Second, a hierarchical co-ordination emerged without proprietary rights. Third, open source systems diffused in environments dominated by proprietary standards. The paper shows that recent developments in the theory of diffusion of technologies with network externality may help to explain these phenomena.

Fitzgerald and Bassett (2004) in “Legal issues relating to free and open source software” explained various issues regarding the intellectual property right and licensing of free and open source software development scenario. The authors mentioned that the clash between non-proprietary and proprietary forms of development in software world is a political, social and economic struggle.

Kavanagh (2004) in his book “Open source software: implementation and management” reviewed the technology components of open source software including
strengths, weaknesses, and migration and interoperability issues. The book also provided key tools for System administrators, Network Administrators, IT project managers, and consultants who must evaluate and deploy open source software.

Bisson (2008) in “Open source takes shape” narrated the history of open source, explained how the OSS movement came about, details key players in OSS development, and discussed why and how open source could work for libraries.

Colford (2009) explained open source and free software and their basic differences in his paper “Explaining Free and Open Source Software”. Discussing about the usefulness of such kind of software the author mentioned “Open source software can unnerve staff and administrators who do not have a full understanding of the concept, the myths and the all-around usefulness of it.”

2.3 Open Source Software for Libraries and Information Centres

Chudnov (1999) in “Open source library systems: getting started” discussed the necessity and use of open source software in the field of library and information science and he mentioned that community based services have made open source software more sophisticated because participants from all over the world used to give support as programmer, tester or user to these kind of software. He again pointed that most of the servers in the world are operated with open source operating systems where most of the supporting software like web server, RDBMS, etc. are open source in nature.

“The installation processes of OSS are not as simple as the installation procedures of commercial software. This is the area that needs improvement, and if done, fewer people would be intimidated by the installation process” said by Morgan (2002) in “Open source software in libraries”. He discussed the philosophy of open source software and he thinks that the development of open source software has similar principles with librarianship, the idea of sharing information.

Crawford (2003) in “Open source, open format: open source solutions for library needs” discussed the challenges that are going to face by the libraries in coming information explosion era. Cost, data portability and access to source code and data files are the three major challenges mentioned by the author and he has strong opinion that open source software can handle such kind of challenges.
In their paper titled “Open source software for economically developing countries: a free IT solution for success?” Negash, Carter, Chen and Wilcox (2007) explained how open source software can be a better alternative for economically developed countries as the cost of open source software application in libraries is very nominal. They took Ethiopia for case study for the paper.

Rafiq and Ameen (2008) in their paper “Issues and lessons learned in open source software adoption in Pakistani libraries” discussed the situation of use of open source software in libraries in Pakistan. He found that adoption of OSS in libraries is just at a beginning stage in Pakistan, and only a few organizations have so far made their first move in this direction. The authors have mentioned that social (cultural) disparity, conceptual confusions, digital divide, and lack of technological, financial, and human development were the major identified issues affecting open source software adoption in Pakistani libraries.

“Keeping in view the economic constraints of the majority of libraries, OSS has a very good prospect for automation of libraries and information centers in Assam” said by Singh and Deka (2008) in their paper “Prospects of Open Source Software in LIS Area of Assam”. The paper mainly discussed about different OSS packages.

Dora, Maharana and Jena (2008) in “Open source movement in Indian libraries: an analytical study” provided a basic idea on OSS, and examine how Indian libraries are using different open source tools in libraries for functions such as automating library activities, building institutional repository, digital library development, content management, website creation and other web based services. The paper also highlighted major open source software used in Indian libraries and tried to comparatively evaluate their problems and prospects.

Krichel (2009) in his paper “From Open Source to Open Libraries” presented the social perspectives of open source software used in libraries. Discussing about the flexibility of open source software, the author mentioned “It is open not only for reading but also for writing”. According to the author again the success of open source software is its reuse.

Schneider (2009) has discussed the opportunities and drawbacks of using open source software in the paper “The thick of the fray: open source software in libraries in the first
decade of this century”. According to him interoperability is the most powerful feature of open source software used in libraries.

Breeding (2009) in “Open source library automation” stated that open source software has become an increasingly popular alternative in the library automation industry, introducing a new set of integrated library systems and a group of companies offering a business model based on service and support rather than software license fees. The paper provided an overview of this new aspect of the library automation industry and provided detailed information about the major open source integrated library systems and the companies that support them.

The library automation industry has seen in the last few years the growth of open source LMS alternatives against proprietary packages. Current open source ILS products have demonstrated a history of increasing functionality with models in place that promises reasonable levels of future development. Breeding (2009) in the paper “The viability of open source ILS” focused on questions regarding to what extent open source ILS products can be considered viable alternatives.

Dangi, Kumar and Verma (2010) in “Application of open source software (OSS) in development of library and information centres” explained the role of open source software in the development of library and information centres and narrated selected open source software for integrated library system and its application in the digital environment.

In their paper “Open source software use in libraries”, Payne and Singh (2010) explained the relationship between OSS technology and libraries; tried to identify the OSS tools and resources currently employed in library operations, examined the attributes of the OSS adoption and implementation process, and recommended areas which would benefit from further study.

Shukla (2010) in “Future of open source library solutions” discussed the need of open source software in library arena. He has mentioned and gave brief descriptions of various open source library software which are used for different library activities like library management and digitization. According to him, open source software have very common features which are similar to commercial closed source software and for this
reason in recent years open source library software have much installations than commercial closed source software.

Open source software packages in the field of library and information science have gone through an informal review process by a strong user community and LIS specialists and hence, quality of such packages is rising day by day. Salve, Lihitkar and Lihitkar (2012) tried to focus on the general and specific features of the some popular open source software packages used in library activities in the paper “Open source software as tools for libraries: an overview”. The authors mentioned that open source digital library software, e-learning management and content management software have already dominating upon commercial software; and the competition between commercial and open source LMSs have been reached upto a interesting level.

Hanumappa, Dora and Navik (2014) “Open source software solutions in Indian libraries” tried to explore the open source software (OSS) market relevant to Indian libraries and more specifically, to review the existing library automation software and digital library software solutions. The study findings indicated that Koha and NewGenLib were found dominant in the LMS category and Dspace, Eprints and Greenstone was mostly used Digital Library Software in India. The study also indicated that there was considerable interest among Indian libraries to adopt or migrate to OSS.

2.4 Library Automation in Academic Libraries

“Computerized library service is likely to be beset with technological, economic and attitudinal problems peculiar to most developing countries” said by Dasgupta (1978) in “Problems of library automation in India”. The paper gave us a clear picture of different problems and prospects of library automation in India during that period.

Seth and Dalai (1995) in their paper “Library automation in India” tried to focus on the general needs and factors which had led to the computerization of library operations in India. The paper discussed about the various organizations in India who had made efforts in the area of library automation.

“A good plan contains the seeds of its modification, and changes are apt to take place even before the timetables have been reached” said by Verzosa (1997) in “Library automation and its impact on strategic planning for academic libraries: a case study of
De La Salle University Library”. The paper was based on the case study of De La Salle University, Philippines; which attempted to make an assessment of the University Library’s computerization planning process, through an analysis of the issues and concerns it had to face in developing an automation program, and concluded with a strategic plan for its implementation and future directions.

Francis (1998) in “Software problems in library automation in India” discussed the problems faced by the library professionals regarding the automation software issues in India and pointed out various compatibility and suitability issues in the selection of library software. The author suggested establishing a machinery to analyse the software requirements and software so that the machinery could evaluate the available software and make suitable recommendations for practical application.

Suku and Pillai (2005) in their paper “Automation of University Libraries in Kerala Status, Problems and Prospects” discussed the present scenario of automation activities of university libraries in Kerala. The survey findings mainly cover various aspects of library automation such as IT infrastructure, housekeeping activities, information services and their usage, human resource development, and financial matters. The role of INFLIBNET Centre in accelerating the automation activities of university libraries, especially in the context of the recently introduced UGC-Infonet programme has been described briefly in the paper.

Mukhopadhyay (2006) in “Five laws and Ten Commandments: The open road of library automation in India” discussed the emergence of open source solutions for library management as possible alternatives to commercial LMS packages. He mentioned Koha as the most featured library management software in the domain and reports development of Unicode-compliant Bengali version of Koha for college libraries and public libraries in West Bengal.

Libraries worldwide are increasingly turning to automation to effectively utilize and manage their information and knowledge resources. Haravu (2004) in his book “Library automation: design, principles and practice” provided a roadmap to libraries contemplating partial or complete automation of their systems. With a brief historical perspective of evolution of library automation systems, in the book the author provided
an extensive analysis of each single methodology that underpins the complex process of library automation.

In their paper “Library Automation and Open Source Solutions Major Shifts & Practices: a Comparative Case Study of Library Automation Systems in India”, Kushwah, Gautam and Singh (2008) discussed the observations and made comparisons on the basis of discussion had with the library community using automation software in India. It also includes the information available in related literature. Features of library automation software, which are mostly in practice by libraries i.e. Libsys and SOUL, are compared with open source system KOHA.

In 2008, Bansode and Periera in their paper “A Survey of Library Automation in College Libraries in Goa State, India” discussed the status of library automation in college libraries of Goa State. They stated that majority of the libraries initiated their automation process in the year 2005 and 2006 and traditional barriers such as insufficient funds, lack of trained staff, and lack of space are faced by majority of the libraries.

In their research paper “Automation and problems in their implementation: An investigation of special libraries in Indore, India”, Rajput and Gautam (2010) discussed various problems and prospects during the process of automation faced by authorities and the staff in special libraries of Indore city, Madhya Pradesh. The authors also highlighted the key propositions for better implementation of library automation and to overcome the obstacles faced during the automation process.

Sampath Kumar and Biradar (2010) in “Use of ICT in college libraries in Karnataka, India: a survey” made a comprehensive study on the use of ICT in different library activities like automated housekeeping, barcode implementation, e-resource management, etc. in 31 college libraries of the state of Karnataka, and the attitude of librarians towards use of ICT. The authors also made an attempt to provide guidelines and strategies for improving ICT facilities and library automation in the college libraries of Karnataka. The authors suggested that even though library professionals showed a positive attitude towards the use of ICT applications and library automation, they needed extensive and appropriate training to make use of ICT tools.
Jayaprakash and Balasubramani (2011) in their paper “Status of Automation in University Libraries of Tamilnadu: A Survey” discussed the scenario of automation of the University Libraries of Tamilnadu and explained the various problems faced by authorities and the staff during the process of automation. The authors also stated that IT experts should also be recruited by the authorities of the universities. The management of the university libraries should ensure that the librarians and IT staff should work in harmony, to ensure that the automation projects succeed.

Sarmah (2011) in “I.T. applications in academic libraries of Assam” discussed the application of information technology in academic libraries of Assam and also the attitude of library professionals towards information technology so that appropriate measures can be adopted to improve the services in a better way. The discussion did not cover all the academic libraries, but libraries of higher educational institutions like university libraries and college libraries in Assam.

2.5 Issues related to Library Management Software

Malwad (2002) explained that selection of library management software was based on specific needs of the institution, its environment, budget, users, aims and objectives in “Selection criteria for library automation software”. The paper reviewed some selected evaluation works, studies and reports and software selection criteria by different organizations were discussed.

The development of integrated library systems needs to be considered in the context of trends, strategies and technical issues within the wider information environment. Ebenezer (2002) in “Trends in integrated library systems” provided an overview of the present state of development of integrated library systems (ILS) and to identify, describe and evaluate significant trends in the industry in relation to their context within the overall development of library services.

Koneru (2003) in “Integrated library system: selection and design” discussed the system selection processes and procedures, and other planning and decision-making issues and factors associated with the design and development of an LMS. The author suggested that before designing a user-centred system, library staff should undertake the system study, which involves identifying the scope of the system and identification of
user’s requirements in a library and information centre and the limitations and problems of the present system.

Greenberg (2005) in “Understanding metadata and metadata schemes” presented a review of the definition of metadata, metadata functions, several metadata typologies and a conceptualization for metadata schemes. The author concluded with a brief discussion on the value of frameworks for examining metadata schemes, including different types of metadata schemes.

In the library context, the term metadata refers to the structured data used to arrange, describe, track and enhance access to resources. These resources can be in printed format or they can be electronically available on the network. Elings and Waibel (2007) in “Metadata for all: descriptive standards and metadata sharing across libraries, archives and museums” defined the concept of metadata and categorized types of standards used in libraries, archives and museums. The authors also provided a brief historical overview of the rise of descriptive standards in museums, libraries and archives, and considered the current tensions and ambitions in making descriptive practice more economic.

Webber and Peters (2010) in the book “Integrated Library Systems: planning, selecting, and implementing” covered every step of the process of acquiring a new ILS or LMS, from cost-benefit analysis to evaluating software, writing the request for proposal, and implementation and training. The book also covered evaluation of software and hardware; third-party add-ons, such as RFID; and writing successful budget proposals and justification statements.

“Web interface in Library Management Software systems” is a review of the research by Shailendra & Rai (2011) on library automation software and their compatibility with the recent development of Web as an interface used for accessing the software in Web environment. They discussed in the paper on Web interface used in Library Management software packages with its technological implications, security issues, database used and web based technical services.

Many libraries are in the process of rethinking the effectiveness of the LMS packages they are using to provide library services, both within and outside of their library buildings. Grant (2012) in the paper “The future of library systems: library services
platforms” discussed such initiatives taken by various vendors. The next generation of these systems are called "library services platforms". The vendors and products that have been announced include: WorldShare™ Management Services by OCLC®, Alma by Ex Libris, Sierra by Innovative Interfaces, Intota™ by Serials Solutions®, Open Library Environment (OLE) by Kuali®, and Open Skies by VTLS.

Obuh and Ogheneme (2012) in “Library automation the ingredients for systems hardware and software interoperability” provided an overview of some elements that are necessary for ensuring hardware and software interoperability in library and information systems. The paper highlighted the meaning to the term system interoperability and identified the need for interoperability alongside some globally accepted standards and mechanisms. Based on this, the paper examined library automation standards such as MARC-21, OAI-PMH and Z39.50 standards. Bottlenecks in ensuring interoperability through standardization were highlighted, the way forward in achieving interoperability among libraries in a library system were also itemized and recommendations were put forward.

Wang and Dawes (2012) in the paper “The next generation Integrated Library System: a promise fulfilled?” examined the state of library systems and described the features needed in a next-generation library system. The two main features of the second-generation library automation system defined by the authors were- it should manage the library resources in the comprehensive and unified way regardless of resource format and location; and it should break away from the traditional ILS models and build on the service oriented architecture (SOA) model. The authors also examined some of the next-generation library systems currently in development i.e., Alma and Kuali OLE; that maintained to fill the changing needs of libraries.

Das & Mandal (2013) in “Standards requirement for integrated library system” attempted to design a framework for comparison of standards available in public domain and implementation of standards facilities in open source LMS packages. The framework was mainly based on recommendations given by ILS-DI and IFLA Working Group on the area under consideration. It took into account global standards like metadata, interoperability, digital preservation, web access and application programming interface etc.
Archana, Padmakumar & Beena (2014) in their paper “Catalogue interfaces of Integrated Library Management Systems (ILMS): experiences in a proprietary and Open Source Software” attempted to share the experiences in cataloguing with a proprietary software (Adlib Library) and Koha open source LMS in Central Library of Cochin University of Science and Technology (CUSAT). The features of the cataloguing modules of both the software were analysed on the basis of certain check points and it was found that the cataloguing module of Koha is almost in par with that of proven proprietary software.

Ukachi, Nwachukwu and Onuoha (2014) in the paper “Library automation and use of open source software to maximize library effectiveness” discussed the importance of library automation and highlighted the key issues for library automation software selection. The authors also discussed the characteristics of open source packages for library automation that qualify them to be effective library management software, and enumerated and briefly discussed the various open source packages available for library management. Brief discussion on the various open source option available for library management had also been done in the paper.

2.6 Comparison of Library Management Software packages

Balnaves (2008) in his paper “Open source library management systems: a multidimensional evaluation” stated that open source LMS projects showed a variety of design approaches, have solid patronage and good user and developer community engagement. The paper provided a comparative analysis of seven open source LMS packages i.e., Koha, Evergreen, Gnuteca, PhpMyBibli, Emilda, PhpMyLibrary and OpenBiblio. The author also mentioned that the emergence of support organisations for the open source LMS packages was a further indicator of the growing maturity of the open source LMS marketplace.

Breeding (2009) in “Major open source ILS products” provided detailed information regarding four open source LMS products namely Koha, Evergreen, NewGenLib and OPALS and he stated that these LMS products have emerged as the most widely implemented and serve as good examples of the current state of the art of the open source LMS.
Haravu (2009) in “Comparison of two open source integrated Library Systems (ILS): Koha (version. 3.0) and NewGenLib (version. 2.2 beta)” provided a detailed comparative analysis of two popular open source LMS packages i.e., Koha and NewGenLib and stated that NewGenLib had superior technology behind it and was probably more scalable as compared to Koha. The author mentioned that the successfulness of an open source package was determined by how well they were marketed and importantly how well they were supported.

In their paper “Usage and Performance of Various Library Software Modules in Engineering Colleges of Karnataka”, Mulla, Chandrashekara and Talawar (2010) discussed the status on the software packages used by the various libraries, and opinions of the librarians about the performance of the different modules of the software they have used. The study was limited to the automated libraries of engineering college libraries in Karnataka.

“When a library selects free software, it chooses not only a powerful means of reducing its spending, but also opportunities to become more independent in terms of its choices of business and software vendors” said by Müller (2011) in the paper “How to choose a free and open source integrated library system”. More than 20 open source LMS packages were mentioned in the paper, but only three open source LMS packages were evaluated namely- Evergreen, Koha, and PMB. The paper had an aim to serve as a reference tool for the selection and acquisition of open source LMS packages but also to correct persisting prejudices against open source LMS packages, including the preconceived risks associated with the implementation and sustainability of open source LMS.

Singh & Sanaman (2012) in their paper “Open source integrated library management systems: comparative analysis of Koha and NewGenLib” provided a detailed comparative analysis of two popular open source LMS packages i.e., Koha and NewGenLib. The detailed comparative study was carried out using a comprehensive checklist designed by the authors for the study. The authors stated that both software packages are more or less equally important in different aspects, so it is the choice for the librarians to select the software on the basis of their requirements.
Pruett and Choi (2013) in “A comparison between select open source and proprietary integrated library systems” considered open source LMS as an attractive alternative to proprietary choices and compared two open source LMS namely Evergreen and Koha with two major proprietary LMS, i.e. Sirsi-Dynix’s Symphony and Ex Libris’ Voyager. The comparison was qualitative and based on case studies, license agreements and copyright law, and user manuals and brochures.

2.7 Koha

Bissels (2008) in the paper “Implementation of an open source library management system: experiences with Koha 3.0 at the Royal London Homoeopathic Hospital” described the selection process and criteria that led to the implementation of the Koha 3.0 library management system (LMS) at the Complementary and Alternative Medicine Library and Information Service (CAMLIS), Royal London Homoeopathic Hospital. The paper was a report based on internal documentation, where the author considered Koha over other proprietary products because Koha was considered more future-proof than proprietary products, and more open to customisation to meet the special needs of the library.

Kamila (2008) in “Koha: how open it is?” discussed about the history, definition, and features of open source software (OSS); also some OSS applications used in library and information centres. In the paper, the author gave a brief account of Koha LMS and its installation procedure on windows, setting of system preferences and operating parameters.

Sirohi and Gupta (2010), as their long association with Nucsoft OSS Labs, a commercial support company of Koha open source LMS, discussed in their book “Koha 3 Library Management System” about their experiences with Koha installation, customization, configuration and maintenance. The book covered the following areas: Koha installation, complete with catalogue data migrated from other LMS system, troubleshooting, installing software updates, and customizing Koha.

Espiau-Bechetoille, Bernon, Bruley, and Mousin (2011) in their paper “An example of inter-university cooperation for implementing Koha in libraries: collective approach and institutional needs” discussed how three university libraries (University Library of Lyon 2 and 3, Lyon, France and University Library of Jean Monnet, Saint-Etienne,
France) decided to migrate their library database from proprietary software for the open source LMS Koha, with particular focus on how they organized themselves to pool their technical skills, human resources and costs. Koha was installed in these three libraries, then tested, wrote common specifications and finally determined which developments could be carried out in-house and which required outsourcing to a software specialist.

Installation of Koha open source LMS is a tedious process for library professionals in many instances. Availability of Koha Live CD can make the installation process easy and save the time of the library professionals. Biju, Jasimudeen & Vimal Kumar (2012) in “A study on managing Koha Open Source library management system using Live CD” gave an overview of the major Koha Live CD projects available and their technical aspects.

“Availability of community support, commercial support, learning tools, library standards and active development has helped Koha open source ILS to make a footprint in library automation market in India” said by Vimal Kumar and Jasimudeen (2012) in their paper “Adoption and user perceptions of KOHA library management system in India”. The paper provided a brief picture of Koha software adoption and the users’ perceptions about it in the Indian library scenario and evaluated the satisfaction level of Indian library professionals with Koha.

Omeluzor, Adara, Ezinwayi, and ObyUmahi (2012) in the paper “Implementation of Koha Integrated Library Management Software (ILMS): the Babcock University experience” discussed the implementation process of Koha open source LMS at the Babcock University (B.U.) Library, Nigeria. Prior to the implementation of Koha at Babcock University Library used X-Lib software for library automation. Strategies, problems and prospects in efficient migration of data from X-Lib software to Koha have been explained in the paper.

Ahammad (2014) in “Implementing the Koha integrated library system at the Independent University, Bangladesh: a practical experience” carried out a study on the implementation of the Koha open-source LMS at the Independent University Bangladesh (IUB) Library, stated how much easy it is to implement Koha in a library and encouraged library professionals to implement Koha in their libraries. The author
implemented Koha at the IUB Library within three months by migrating data from CDS/ISIS to MARC-21 format and then importing into Koha.

Mishra (2015) in “Systematic approach of data migration, customization and implementation of Koha: a case study of Saharanpur Campus Library, IIT Roorkee” described the implementation and customization of open source LMS Koha and the process for migration of exiting data from other LMS in Saharanpur Campus Library of Indian Institute of Technology Roorkee (IITR). The author highlighted that technical works for implementation of Koha can be done by Library professionals at zero cost with little efforts. The author also attempted to discuss about the real practical problems, solutions, technical difficulties and other management related issues while migrating from existing LMS to open source LMS Koha.

Review of literature is the study of literature available on different formats e.g. prints as well as digital, published earlier on the study area selected and reporting those in a systematic order as a critical summary. In this chapter an attempt has been made to include and cite the relevant works on the study area. But the literature on the study area is so vast that it is nearly impossible to include all the important literature in this review. The present review cannot be claimed as a complete one; only selected and available literatures on the study area are included.