When it comes to software, I much prefer free software, because I have very seldom seen a program that has worked well enough for my needs, and having sources available can be a life-saver.

- Linus Torvalds
Open source software has had an increasingly high profile in the library and information management profession since 1999. A September 1999 meeting of 80 senior American academic library managers created three “Keystone principles” to set a foundation for future developments of library services. One of these, “libraries are responsible for creating innovative information systems for the dissemination and preservation of information and new knowledge regardless of format” had an action item to “create interoperability in the systems they develop and create open source software for the access, dissemination and management of information” Keystone (2000). Members of the profession have continued to have a high level of interest in F/OS software, with over 200 articles and conference papers published in the last 4 years to describe specific projects. The oss4lib portal (http://www.oss4lib.org), originally set up in 1999, listed over 80 library-related projects in September 2003.

Frumkin (2002) suggests that the open source movement gives librarians an opportunity to become more active in determining the future development of the software they use, rather than letting vendors keep control. As Brandt (2001) notes, librarians have long been active not only in taking advantage of technological innovations, but also in experimenting with new approaches (using Peter Scott’s HyTelnet as one example) and the open source approach should increase the opportunities for such activity. The following section summarizes points made in the professional literature about the potential benefits and issues associated with using open source software in libraries.
1.1 – Aim and Objectives of the Study:

The aim of the present Research Study is:
“ to identify the OSS platform as an opportunity which can be used to improve the services of Libraries, inter-se, to society at large and contribute thereby to the development of knowledge society and the ‘onward march of human progress’.

The objectives of the study include, inter alia the following

1) To identify various Open Source Software (OSS) platforms / distros and ascertain the intensity, (or otherwise) of the use of the said platforms in the respective areas, in different libraries, of library management.

2) To ascertain the best Open Source Software for
   a) Integrated Library System
   b) Digital Library
   c) Web Content Management
   d) E-Learning

3) To ascertain the use of OSS across key parameters like gender, age groups, persons with different levels of academic accomplishments, hierarchy of libraries, schools to colleges and universities and across other institutional library networks viz. Corporates, Public libraries, Research organization, providing library services in terms of number of employees, intensity of services offered in terms of numbers of hours services per day et al.

4) To study frequency of use of OSS at work/home, frequency of use of OSS, trained staff available to use OSS.
5) To set up suitable hypotheses to assess the effectiveness and adequacy of OSS to meet the existing and emerging challenges of libraries interface society at large, particularly end users, teachers, students, heads of institution, entrepreneurs and all other stakeholders, like parents, Government, corporates et al.

6) Based on the outcomes of para 5 identify strategies for change to adopt OSS and ensure that members of the society are adequately enabled, empowered and therefore are permitted and can enact themselves.

1.2 - Scope of the Study:

The Research is based on the study of available Open Source Software useful to libraries in general. It includes integrated library systems, digital library, content management and e-learning tools useful in day to day functioning of the libraries.

1.3 - Methodology of the Study:

The methodology adopted includes, inter alia, the following steps in the indicated order:

a) Designing a questionnaire directed to chosen target libraries, in different strata of the sample of 380 respondents, (1000 respondent were approached out of which 380 responded positively), to assess various facets governing the deployment of OSS to libraries and society at large;

b) Approaching respondents from across the globe, through email, for data collection with a view to make the sample as broad as possible to permit national and international comparisons and contrasts;

c) Obtaining information relating to policies practices, followed by libraries through a structured questionnaire with scope for:
i) ‘Yes/No’ kind of answers for precision, ready statistical tabulation and eventual analysis, interpretation and critical examination.

AND

ii) Descriptive possibly subjective, responses regarding the prevailing policies and practices in the 380 respondents’ libraries.

d) Identify various databases, data banks, researched information to obtain viable, valuable, value added, state of the art, inputs that can enhance the research study in terms of

- Improved quantitative analysis viz Reliability, t-test, Anova, Chi-square and Regression
- Better qualitative inputs from sources mentioned in para (d) above.
- Ideas and thoughts to suggest strategies for change.
RESEARCH METHODOLOGY

Questionnaire

380 Respondents

- Tables indicating frequency distribution with percentage
- Graphs showing pictorial presentation
- STATISTICAL TOOLS
  - Reliability Analysis
  - t-test and Anova
  - Chi-square
  - Regression

Cronbach Alpha
Average R
1.4 - Hypotheses of the Study:

Hypotheses which were visualised at the time of preparation of synopsis are presented below:

- Greater use of the internet is linked with a higher probability of using OSS
- OSS is mostly used in large organizations
- Use of OSS depends on training
- Group/Mailing list plays vital role in OSS
- OSS is mostly used by young generation below 30yrs
- OSS is mostly used on Windows platform by Librarians
- Koha Integrated Library software is mostly used by the Librarians
- Dspace Digital Library is software is mostly used by the Librarians
- Most of the Librarians are not using Web Content Management Software and E-Learning software.
- Those who have taken the software support more than 10 times are using the OSS in real sense.

However, encouraged by the good response to the questionnaire (N= 380) and also the prowess of ICT to operate many statistical tests, larger number of hypotheses could be tested.

Thus in all 97 hypothesis were tested of which 27 hypotheses have been researched further in detail from various dimensions. The other 70 hypothesis which have not been discussed as such, due to overlap or redundancy to the main theme, have also been presented in the Appendix-4.
Nature and Scope of Open Source Software:

Access to different sources of software is a means to enable users of various softwares vis-a-vis platforms to get value for time and money through Information and Communication Technology (ICT). In the course of the last century where ICT has been an important intervention in man’s life, sources of software have been the conduit for ICT applications which have provided value added inputs to professional, personal, social and other endeavours.

Thus, users of ICT have access to two types of software viz. closed or proprietary software applications and open source software applications.

Proprietary software is defined as “software that is owned by an individual or a company (usually the one that developed it)”. There are almost always major restrictions on its use, and its source code is almost always kept secret.

Open source software is defined as “software which can be used, copied, studied, modified and redistributed without restriction”.

In the context of the choice to be made between the said two sources and also the need for ICT applications on a mass scale across the bottom of the pyramid and also across the swath of the population cost effective software becomes a very important consideration where inclusiveness, and continues to be, a condition precedent for the success of ICT and its impact on society.

Therefore the availability of OSS, free of cost, to end users becomes a boon to society at large. At a time when the world was on the threshold of the information age and knowledge society OSS became very important, an useful and very handy tool, for applications in various walks of life. Thus through ICT, and particularly OSS, Governments, started planning societal transformation and prepared for a fast movement from an agrarian society to a knowledge society via the industrial and information revolution.
In the same vein the products and services available to society has improved and across the world and India too, gone through a transformation from mere availability of raw material and agricultural products to industrial and information products and now knowledge driven products and knowledge based services.

This aspect is well presented in the Figure No.1:
Figure No. 1: Economic Growth in Different Societies

Figure No. 2: Knowledge Society

Empowerment
- Policy Evolution
- Administrative Procedure Evolution
- Changes In Regulatory Methods
- Identification of Partners
- Identification of Leaders

Societal Transformation
- Education
- Health Care
- Agriculture
- Governance

Citizen-centric Approach
- Business Policy Evolution
- Intensified Industry-lab-academy Ties
- Customer-driven Technology Evolution

Knowledge Society

Wealth Generation

Technology
- IT & Communication
- Biotechnology
- Space Technology
- Materials Technology
- Oceanography

Service Driven
- Disaster Mitigation
- Weather Modification
- Tele Medicine
- Tele Education
- Native Knowledge Products
- Infotainment
- Conventional & Non-conventional Energy

- IT Products $80 billion by 2008
- Knowledge – Based Product’s Market Potential Several -Fold by 2010

- Employment Generation
- High Productivity
- High Industrial Growth
- Empowerment of Women
- Transparent Society
- Rural Prosperity
Figure 1 and 2 indicate the urgent need for societal transformation and also the issues hovering around the information age and emerging knowledge society.

An OSS is the condition precedent for meeting the challenges posed in Figure 1 and 2 respectively. Hence the importance of OSS.

“Twenty first century will be the century of knowledge. Only those nations will survive and succeed, which will build themselves by understanding the dynamics of knowledge and create true knowledge societies”.


**Figure No. 3: Role of OSS in Internet**
Role of OSS in Internet:

Internet plays vital role in developing OSS. Portal gives an in-depth information of softwares, available for various streams. Sourceforge.net is having the list of 250000+ softwares.

With the help of Internet we can connect to the users of the software and developers. There are various channels through which one can update the information of software and solve the errors. Ex. IRC (Internet Relay Chat) with developers.

Figure No.3 presented above shows the pivotal role played by internet in facilitating the use of OSS. The associated programmes that create awareness of OSS among users are also presented indicating the structure within which OSS can function smoothly.

Thus, OSS assumes importance and has posit itself as a high profile input in the management of library and information science and knowledge repositories.

Open Source Software (OSS):

The term “Open Source” was introduced during the foundation of the Open Source Initiative in 1998. At that time, it was only a different expression for what people of the Free Software Foundation were using since the mid-80's: promoting free software. “Free” in the sense that an open license, not commercial, was applied to the software and everyone who wanted to use the software or make it better could just do that, because he or she had access to the source-code and the right to modify it.

But free does not necessarily mean that the software is given away for free. Open Source Licenses allow the selling of Open Source Software, as long as the distribution always contains an easy way of accessing the sources. A good example of this is GNU / Linux, an alternative operating system. Linux distributors like Mandriva (formerly Mandrake) or RedHat are basing their products almost entirely on Free Software, but
sell it in packaged, tested and reviewed form for professional users and companies. They also offer services like training programs or support; sometimes they even enrich their products with special proprietary software.

Open source is a software development model as well as a software distribution model. In this model the source code of programs is made freely available with the software itself so that anyone can see, change and distribute it provided they abide by the accompanying license. In this sense, Open Source is similar to peer review, which is used to strengthen the progress of scholarly communication.

The open source software differs from the closed source or proprietary software which may only be obtained by some form of payment, either by purchase or by leasing or any combination thereof. The primary difference between the two is the freedom to modify the software.

An open system is a design philosophy antithetical to solutions designed to be proprietary. The idea behind it is that institutions, such as libraries, can build a combination of components and deliver services that include offerings of several vendors. Thus, for instance, a library might use an integrated library system from one of the major vendors in combination with an open source product developed by another library or by itself in order to better meet its users’ requirements – internal / external as the case may be. Thus the services can be an ultra combination of platforms/software to make mass customization a reality.

**Definition:**

According to Open Source Initiative (http://www.opensource.org/):

> “Open source promotes software reliability and quality by supporting independent peer review and rapid evolution of source code. To be certified as open source, the license of a program must guarantee the right to read, redistribute, modify and use it freely”.
Open Source Software Meaning (Chudnov, 1999):

☞ Open source software is typically created and maintained by developers crossing institutional and national boundaries, collaborating by using internet-based communications and development tools;

☞ Products are typically a certain kind of “free”, often through a license that specifies that applications and source code (the programming instructions written to create the applications) are free to use, modify and redistribute as long as all uses, modifications and redistribution are similarly licensed;

☞ Successful applications tend to be developed more quickly and with better responsiveness to the needs of users who can readily use and evaluate open source applications because they are free;

☞ Quality, not profit, drives open source developers who take personal pride in seeing their working solutions adopted;

☞ Intellectual property rights to open source software belong to everyone who helps build it or simply uses it, not just the vendor or institution who created or sold the software.

Open Source Software - The Ten Commandments:

The Open Source Initiative (OSI identified ten criteria for a software product to be called open source. The OSI certifies a software license as an ‘OSI Certified License’ on the basis of the following ‘Ten Commandments’.
Figure No. 4: OSS - The Ten Commandments

1. Free Redistribution
2. Source Code
3. Derived Works
4. Integrity of the Author's Source Code
5. No Discrimination against Persons of Groups
6. No Discrimination against Fields of Endeavour
7. License must be technology-neutral
8. Distribution of License
9. License must not be specific to a product
10. License must not restrict other software

The Ten Commandments
1  **Free Redistribution:**

The license shall not restrict any party from selling or giving the software as a component for an aggregate software distribution containing programs from several different sources. The license shall not require a royalty or other fee for such sale.

2  **Source Code:**

The program must include source code and must allow distribution in source code as well as compiled form. Where some form of a product is not distributed with source code, there must be a well-publicized means of obtaining the source code for no more than a reasonable reproduction cost preferably, downloading via the Internet without charge. The source code must be the preferred form in which a programmer would modify the program. Deliberately obfuscated source code is not allowed. Intermediate forms such as the output of a preprocessor or translator are not allowed.

3  **Derived Work:**

The license must allow modifications and derived works and must allow them to be distributed under the same terms as the license of the original software.

4  **Integrity of the Author's Source Code:**

The license may restrict source code from being distributed in modified form only if the license allows the distribution of patch files with the source code for the purpose of modifying the program at build time. The license must explicitly permit distribution of software built from modified source code. The license may require derived works to carry a different name or version number from the original software.
5  **No Discrimination Against Persons or Groups.**

The license must not discriminate against any person or group of persons.

6  **No Discrimination Against Fields of Endeavor.**

The license must not restrict anyone from making use of the program in a specific field of endeavor. For example, it may not restrict the program from being used in a business, or from being used for genetic research.

7  **Distribution of License.**

The rights attached to the program must apply to all to whom the program is redistributed without the need for execution of an additional license by those parties.

8  **License Must Not Be Specific to a Product.**

The rights attached to the program must not depend on the program’s being part of a particular software distribution. If the program is extracted from that distribution and used or distributed within the terms of the program’s license, all parties to whom the program is redistributed should have the same rights as those that are granted in conjunction with the original software distribution.
The rights attached to the program must apply to all to whom the program is redistributed without the need for execution of an additional license by those parties.

The license must not contaminate other software by placing restrictions on any software distributed along with the licensed software.