ISSN 2456- 2637

Use of FOSS (Free and Open Source Software) Learning Management Systems for Open and Distance Learning to reach the Masses in India: A Step towards Sustainable Education Initiative

Dr. Mrs. Ashwini Atul Renavikar

Visiting Faculty

Abstract

The paper reviews the extent of possibility and applicability of free and open source learning management system for reaching out to masses in India through open and distance learning. The review is based on select LMS (Learning Management systems) software's registered on Soruceforge.com and Financeonline.com, the platforms which hosts highest number of FOSS. To reach to masses through open and distance learning platforms, it is inevitable to keep it not only simple but economically viable, this is where free and open source software plays a vital role.

With the advent of internet, all kinds of services are trying to reach remotest places in India. Education sector, though started late, has been now extensively exploring this option to provide sustainable and cost-effective option. The author attempts to compare select LMSs registered on Sourceforge.net and Financialsonline.com to analyze their adaptability for different functions in the process of learning.

Keywords

Learning management Systems, Open and distance Education, Core learning tools, Customization, personalization

I. Introduction

I.I About the Study

The study is carried out, primarily to assess the applicability of FOSS learning management systems as a sustainable and cost-effective alternative to traditional formal education systems, to reach out to masses in India, where it is difficult to generate the kind of infrastructure to deliver quality education. Prior to the advent of internet in India, somewhere in late nineties, distance education was mainly provided through exclusive teaching material in published format. Though teaching-learning took place through the published material, evaluation was conducted through examination centers. But, since penetration of internet in remote areas, there has been major thrust in exploring it as a vehicle for reaching the masses for educating the

ones, who are deprived of state-of-the-art physical infrastructure required for teaching–learning process, which is otherwise easily available in urban and semi-urban areas. UNESCO has been playing a catalyst role in increasing the spread and quality of education. It defines correspondence education as 'Education conducted by postal services with teacher and learner being unavailable or unreachable to each other, teaching is done by large tape recorder or written materials and evaluation done by teacher and resent to learner".

I.II History of Open and Distance Learning in India

Post-independence emergence of ODE (Open and distance Education) goes back to 1960s where Yashwantrao Chavan Memorial Open University , followed by Indira Gandhi National Open University were two pioneer institutions to take lead in launching platform and building infrastructure to deliver education in open and distance mode. ODE was widely promoted under the guidance of the then Education minister, S.K.Srimali who set the objectives of ODE as:

1. To provide a less expensive and yet an efficient system of education in the context of national development in India.
2. To offer educational opportunities for the less fortunate.
3. To offer the educated Indians academic paths for improvement.

During this era of emergence of ODE, Teaching and instruction material was distributed in published book formats, which was customized to take care of distance learning format. Currently, there are more than 2 dozens of premier institutions actively contributing to proliferation of ODE format of learning. Panda, Garg et.al.(2006) in the chapter published by the duo mention that careful technology-based changes are required for open and blended format of delivering education through open and distance mode.

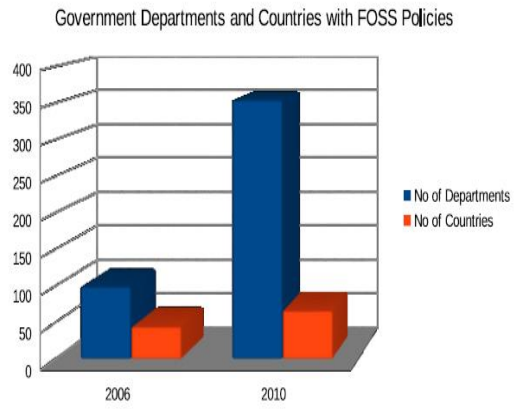

Figure 1: FOSS Adoption in Government (Source: Center for Strategic and International Studies)

Free and open source software has made their mark since and have shown continuous incline in their use since late

1990s. The bouquet of variety of open source software offered have pushed the masses as well as research fraternity to work further and deeper to explore their benefits. With strong FOSS communities dedicated to the development of FOSS, the applications have become more and stronger on quality front. De Rahul and Sivamalai L. (2015) in the report published by IIM Bangalore, highlight the phenomenal increase of use of FOSS in government sector of different countries, As seen in the figure 1 ,during last two decades, the growth in exploring use of open source application in government sector has increased by 300%.

As shown in the figure, 2 , some of the obvious benefits of FOSS such as lesser dependence on vendors, lower cost, easier to customize and better security have pushed their use amongst masses.

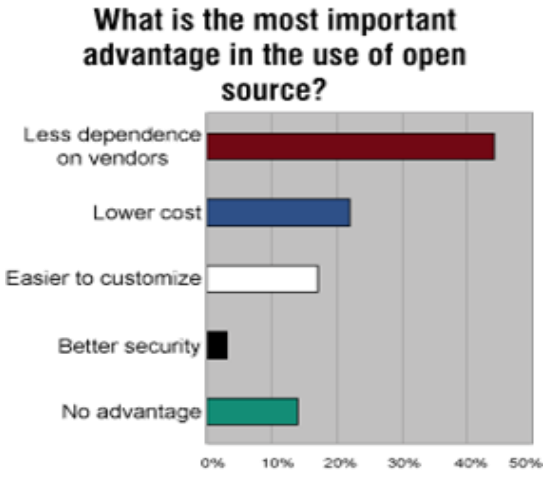

Figure 2: Advantages of FOSS

II. Literature Review

According to Borje Holmberg (2019), "Distance Education covers the various forms of study at all levels, which are not under the continuous, immediate supervision of tutors present with their students in the lecture rooms or in the same premises, but which, nevertheless, benefit from the planning, guidance and tuition of a tutorial organization" .

In the words of Perry and Rumble (1987), DE is a system wherein "the learner and the teacher are not face to face. In order for two-way communication to take place between them, a medium such as print, radio, or the telephone has to be used". Rumble (1997) re-defined open and distance learning system as:

a) The regulatory sub-system: such as human resources, purchase, finance, equipment and building;

b) The material sub-system: such as production and distribution of learning material;

c) The students support system: such as to enroll students, collection of fees, allocation of study and exam center. Hillary Perraton, defined DE as an educational process in which a significant proposition of the teaching is conducted by some removed in space and/or time from the learners.

Belal Najeh, Nur et. al. (2015) in a paper published by them take review of different studies on OSS and LMS conclude that OSS-LMS can take front role in adapting ever changing scenario in education sector and it can serve as a building element for the system, or as ideas resource providing guidance for the system enabling it to expand rapidly covering different aspects.

Aydin and Tireks (2010) analyze most widely open source plat form for ODE i.e Moodle, discussing at length all features of Moodle and its compatibility for delivering ODE effectively.

In the view of Okmen (2008) most debated advantages and disadvantages of open source (OSC) software are; total cost, other financial and forensic subjects Advantages of using OSC software can be summarized as follows (Okmen, 2008): There is no single feature on which the future of the software depends: Open source architecture enables the user to take away the software company dependency risk that originated the code chosen to stop development and increase maintenance and development fees. Confidence: Popular OSC software is examined by many developers and software experts so; it is filtered and cleaned of errors. In this way, with the increase in quality, the fundamental aim of software production and the process of usage, Users confidence in the software increases. Sensitivity and flexibility for User Requirements: OSC software is often updated more frequently than proprietary software. Most of the time, these changes reflect the needs of the user and the developer community.

Mtebe and Raisamo (2014) in one of their research paper elaborate a model for evaluation of open source LMS software in sub-Saharan countries, which concludes that overall acceptability of opens source LMS depends on course quality, system quality and service quality which in turn have impact on quality of learner satisfaction and LMS use that give perceived benefits of LMS.

Savidas G. (2017) in her article on Selecthub.com suggests five broad categories of characteristics to be considered while assessing its fitness for the organization. The five categories are:

a. Core learning tools and Course management.

b. User interface and ease of learning.

c. Customization and personalization.

d. Analytics and reporting ability.

e. Pricing models. Based on these five broad categories, the author has identified further parameters which are

listed in section III – Research Methodology.

III. Research Methodology

After the exhaustive reading on FOSS and LMS area, it was found that many articles are available on evaluation of LMS and FOSS as well as experiences and models for their evaluation and installations in countries like France, United Kingdom, Malaysia, even South Africa, very few or negligible focused studies for above topics in India are available. Though, some educational institutions have started using Moodle as a platform for delivering course contents and assessment purpose, it is not explored to its fullest extent and limited features are being used. Here is where the author finds the gap for this study undertaken and has taken over this area to further explore and get some insights into.

The study is based on secondary data available for public on sourceforge.net and financialsonline.cm, the two largest and most widely used platforms for registering open source software of different types. Out of 575 learning portals registered on these two platforms, top 10 were chosen, the basis for which is reviews and ratings given by end-users. The study is exploratory in nature and gives a snapshot view of the research area.

The study revolves around following research questions:

RQ1-Can FOSS-LMS become an economically viable option to commercial LMS applications, for educational institutions providing ODE?

RQ2- What are the different features of FOSS-LMS that influence deployment of FOSS in educational institutions?

Based on the gaps in research derived from literature review, following were identified as objectives for the study:

Objectives of the study:

1. To understand the scenario of use of FOSS-LMS for Indian educational institutions
2. To have comparative view of variety of FOSS–LMS listed on Sourceforge.net and Financialsonline.com.
3. To identify and suggest right FOSS-LMS for educational institutions in India

Any LMS is expected to cater at least following capabilities to be considered an alternative to traditional ODE format to be delivered through electronic mode.

a) Course management

b) Course and content delivery

c) Progress tracking and evaluation

d) Reporting and analytics

e) Collaboration

f) Data access

g) Ease of use

h) Integration

i) Support

j) Personalized learning paths

The research tries to encompass all the above parameters while analyzing the LMSs chosen for the study.

IV. Data Collection and Analysis

Quantitative as well qualitative data was collected about the 10 LMS applications from their websites, from Sourceforge.net and the reviews and information available on financialonline.com. Average of ratings given by end-users was calculated. Five parameters – User interface (Ease of use), ability to localize, Security, Performance and sufficiency (comprehensiveness) were considered by the author to judge the quality of the FOSS-LMS. Apart from these, Flexibility and portability, Support to foreign language and Indian languages, pricing models offered by FO”SS-LMS, support to different types of organizations were some more aspects were also considered for evaluation of applications.

Based on user reviews, 10 FOSS-LMS software’s are considered for the quantitative and qualitative analysis. The list is as follows:

1. AbsorbLMS

2. DoceboLMS

3. SAPLitmos

4. Talent LMS

5. CanvasLMS

6. BridgeLMS

7. Moodle LMS

8. Skyprep

9. MindFlash

10. Coassemble

Following are important outcomes of the test based content analysis of the qualitative data collected in the form of comments available on the site financialsonline.com, which is dedicated to open source software and their usage:

A. Some common observations based on content analysis of all above about FOSS-LMS :

1. All the LMS application have mobile interface and can be accessed through cloud.

2. There is a facility to integrate the applications with third party services.

3. Pricing models are economically viable even for Indian educational institutions.

4. All applications have the facility of course / content authoring, administration and reporting.

5. All the applications are interoperable; they work on different operating systems and browser platforms.

6. Unfortunately, none of these provide user interface in Indian languages.

B. Analysis of the LMS application was done using quantitative ratings given by the end users of the applications on the site Financialsonline.com. The ratings are based on the parameters: User interface i.e. Ease of use, Localization, Security (Certifications), performance (speed, diligence, reliability) and Sufficiency (inclusion of all different core functions in an education system). Author has added four more parameters - Flexibility (ability to seamlessly function on different operating systems and browsers), pricing models, support to Indian languages, Support to foreign languages and the nature of organizations that is supported by the LMS.

1. Top 3 open source LMS based on the objective ratings given on the site, Moodle (4.9/5), Talent LMS(4.8/5) and SAPLitmos as well as MindFlash (both 4.6/5) grab top 3 positions in the list of 10 select FOSS LMS.

2. Except AbsorbLMS and Coassemble, all the remaining 8 applications provide the user interface in foreign languages.

3. AbsorbLMS, Skyprep and Coassemble do not provide free pricing model for the beginners and education purpose.

4. AbsorbLMS and Docebo are suitable only for large and medium size organizations whereas all the remaining 7 LMS are suitable for large, medium as well small scale organizations.

V. Conclusions

The research paper revolves around 2 research questions and 3 objectives and the paper cannot be complete without objective discussion about these points.

Answer to the RQ1, i.e. can FOSS-LMS can become economically viable option for commercial LMS “, the answer is, YES,

open source LMS can very much become a viable option to commercial LMS.

Answer to RQ2, "What are the different features of FOSS-LMS that influence deployment of FOSS in educational institutions?" The answer is, backed by strong open source community support, continuous updates, free pricing model, and support to foreign languages and comprehensive functionalities for educational services are different features that influence use of FOSS-LMS in educations institutions.

Further, part A and B in the section IV - Data collection and analysis together take care of all objectives mentioned in section III i.e., Research Methodology and can be concluded to be achieved.

VI. References and Bibliography

1. Aydin Cansu and Tirkes Guzin (2016), Open source learning management systems in e-learning and Moodle , International Journal Of Scientific & Technology Research Volume 5, ISSUE 09, ISSN 2277-8616.

2. Belal Najeh, Nur Fazidah et.al. (2016), Study on Open Source Learning Management Systems: A Survey, Profile and Taxonomy, Journal of Theoretical and Applied Information Technology, Vol 82 No. 1, ISSN – 1992-8645.

3. Holmberg, Borje (1995), The Evolution of the Character and Practice of Distance Education in Open Learning, Accessed from http://www.c3l.unioldenburg. de/cde/found/holmbg95.htm.

4. Mohamed R. Elabnody (2016), A Survey Of Top 10 Open Source Learning Management Systems, International Journal of Scientific and Technology Research, Vol 5, Issue 09, ISSN 2277-8616.

5. Mtebe Joel and Raisamo Roope (2014), A Model for Assessing Learning Management System Success in Higher Education in Sub-Saharan Countries, Electronic Journal of Information Systems in Developing Countries.

6. Panda Santosh and Garg Suresh (2019), Chapter 2, India: National Perspectives in a Digital Age, Open and Distance Education in Asia, Africa and the Middle East, pp.27-42.

7. Rahul De' and Sivamalai Lewin, Ravi A. Rao et al.(2015), Economic Impact of Free and Open Source, Software Usage in Government Final Report,

Published by Indian Institute of Management, Bangalore.

8. Santaniello Nick (2017), Article on Selecthub.com "6 Ways To Conduct A Comprehensive LMS Evaluation.

9. Walter Perry and Greville Rumble (2011), Innovations in lifelong learning-edited book-Critical perspectives on diversity, participation and vocational learning, Routledge publication ed. I.