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Awareness and Adoption of Open Source Software among LIS Professionals of Engineering Colleges of Odisha

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ABSTRACT

To provide a general context for library implementations of open source software (OSS), the purpose of this paper is to assess and evaluate the awareness and adoption of OSS by the LIS professionals working in various engineering colleges of Odisha. The study is based on survey method and questionnaire technique was used for collection data from the respondents. The study finds that although the LIS professionals of engineering colleges of Odisha have knowledge on OSS, their uses in libraries are in budding stage. Suggests that for the widespread use of OSS in engineering college libraries of Odisha, a cooperative and participatory organisational system, positive attitude of authorities and LIS professionals, proper training provision for LIS professionals need to be developed.

Keywords: Open source software, Engineering college, LIS professionals

1. INTRODUCTION

The open source software (OSS) phenomenon has become a trend in IT industries during last decades with the increasing numbers of OSS users and availability of OSS software in a large variety of domain. This trend can be well realised in library and information science field also. The main reason of this is the choice of freedom. Contrary to proprietary or closed source programs such as Windows, Oracle, etc., in OSS, the source code is available for users to modify and make improvement to it. Accordingly, if a user encounters a bug or face a problem, he/she can fix the error without relying on the vendor, which is time consuming and frustrating. Also the users have options to modify and make improvement in the programs as per the need with the help of available source code. Thus, there is scope to use the talent of user and customise the software as per requirement. Further, the absence of license restrictions and the possibility of interpolation with other applications make OSS more popular day by day. "The OSS offers libraries an attractive solution. Library end users with technical and nontechnical skills can participate in OSS installation and maintenance, librarians can engage in OSS development and modifications, and library user groups can often customise OSS environments. Moreover, OSS is an important library solution, for there exists a large use-base for OSS applications, a wide variety of available OSS tools, and a multitude of OSS support channels"[1]

The concept on OSS that it is absolutely free seems to be impractical. Although unlike commercial software there is no initial purchase fees or license fees or upgrade fees, but it requires an investment of time and effort by users like other commercial software. The benefits of OSS are compelling libraries towards the use of OSS software and many libraries have adopted these software for various purposes more specifically for automation, creation of digital library, institutional repositories, etc.

The paper is an attempt to make a study on the awareness and adaptation of OSS by the LIS professionals of Engineering Colleges of Odisha.

2. LITERATURE REVIEW

A good number of studies on OSS, its history and case studies in libraries have been carried out by students, research scholars, and teachers of various

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institutions all over the world. Giri & Sengar[2] in their paper have provided an insight into the practical implementation aspects of OSS for managing the activities and services of a library. They have identified that the main pre-requisite of OSS use in libraries is the librarian's potentiality to harness the staff motivation in a positive way. They found that OSS is more future oriented and is an suitable low cost alternative to their proprietary counterpart. Biswas & Paul[3] in their study have made an evaluation of DSpace and GSDL. They have tried to identify the extent of adoption of open source digital library software packages in various organisations through an online survey.

Bissels[4] discussed OSS installation at the Royal London Homeopathic Hospital (RLHH) and described the transition to the Koha 3.0 library management system (LMS) as the library's primary information access framework. He has stated that Koha, an open source ILS, fulfilled the needs and goals of a specialised medical library institution. Goh[5], *et al*. introduced an evaluation of four open source DL products with the intended result of a standardised methodology for the selection of OSS for DL[5].

3. OBJECTIVES

The basic objective of the study is to make an analysis of the use and awareness of OSS among the LIS professionals working in engineering colleges of Odisha. However the other objectives of the study are to:

(a) Identify the types of OSS skills possessed by the LIS professionals working in engineering colleges of Odisha

(b) Assess the application of OSS by LIS professionals in libraries

(c) Find out the reasons of low use of OSS by LIS professionals

4. SCOPE AND LIMITATIONS OF STUDY

The scope of the study encompasses the use and adoption of OSS by the LIS professionals working in engineering colleges of Odisha. However, the study has following limitations:

(a) The study is limited to Odisha only.

(b) The study includes only the engineering colleges (both Govt. and Self-financed) of Odisha, which are affiliated under Biju Pattanik University of Technology (BPUT), Odisha and approved by AICTE by the year 2010.

(c) The study covers only LIS professionals and not any other category of staff of engineering colleges. Among various aspects of LIS professionals, the study is limited to awareness and use of OSS only.

5. METHODOLOGY

This study is based on survey (questionnaire) method. A structured questionnaire was designed and distributed to collect data from the LIS professionals of engineering colleges of Odisha which were affiliated to BPUT by the year 2010 keeping in mind the basic objectives of the study. Besides, personal interviews were also conducted with library and information science professionals and experts to assess the problems related to use of OSS.

6. ANALYSIS OF DATA

The questionnaires were distributed to 202 LIS professionals (2 professional from each engineering college on random sampling basis), out of which 148 filled-in questionnaires (73.27 %) were collected. Hence, in all case the total number of respondents will be 148. The data collected through the questionnaires was scrutinized, classified, and tabulated for better understanding and clarity. To make the data analysis statistically sound, various statistical techniques such as percentage, arithmetic mean, and weighted arithmetic mean have been used.

6.1 Respondents

The professional qualification, experience, designation also effects their professional skills and competencies to a great extent. The present study attempts to collect data on this which have been tabulated in Table 1.

The data analysis of Table 1 depicts designation of respondents that out of 148 respondents, 25 (16.89 %)

Table 1. Designation, professional qualification, and experiences of respondents

Respondent	No. of respondents	Percentage (%)
Designation		
Librarian	81	54.73
Asst. Librarian	42	28.38
Others	25	16.89
Total	148	100
Professional qualification		
PhD	2	1.35
MPhil	13	8.79
MLIS	106	71.62
BLIS	27	18.24
Total	148	100
Experience		
1- 5 years	38	25.68
5-10 years	86	58.1
10-15 years	21	14.19
More than 15 years	3	2.03
Total	**148**	**100**

are of other designation such as Junior Librarian, Professional Assistant, etc. Regarding professional qualification of respondents, the data analysis shows that as high as 106 (71.62 %) respondents out of 148 have MLIS qualification.

6.2 Knowledge of Computers and ICT

The analysis of data collected on respondents' knowledge on computer and ICT reveals that all respondents are computer literate and have sound knowledge on the various ICT tools available in libraries. It seems to be a healthy sign for the engineering colleges of Odisha.

6.3 Knowledge of Open Source Operating System

Knowledge on operating system is the primary requisite to handle computer systems. The respondents were asked about their knowledge on open source operating system on the basis of self assessment and data is tabulated in Table 2. The analysis of data shows that as per the weighted arithmetic mean, more number of users is conversant with Ubunto followed by Fedora, SUSE, Dream Linux and Unix with the weighted arithmetic mean value of 30.8, 25.8, 23.7, 21.5 and 21.2, respectively.

6.4 Knowledge of Library Automation OSS

Automation has become the basic necessity for libraries of all kind and many libraries are adopting OSS for library automation due to several advantages associated with this. Realising the importance of library automation, the respondents were asked about to their knowledge on open source library automation software and the collected data is tabulated in Table 3.

The analysis of data of Table 3 reveals that ISIS/CDS is most popular OSS with weight arithmetic mean value of 39.2. It is followed by other OSS such as Library Management System, Koha, NewGenLib, PhpMyLibrary, and OpenBiblio with weighted arithmetic mean value of 30.4, 19.4, 18.4, 17.3 and 16.3, respectively.

6.5 Knowledge of Digital Library OSS

The new trends of modern libraries are towards creation of digital library/institutional repositories and many libraries are using OSS for their creation. Accordingly, the present study attempts to know about the respondents' knowledge on these OSS. The data collected on this have been tabulated in Table 4.

Table 2. Knowledge of open source operating software

Operating system	Not known	Partially known	Known	Fully known	Weighted arithmetic mean	Rank
Unix	97 (62.54)	38 (26.68)	13 (8.78)	—	21.2	5
Ubunto	57 (38.51)	34 (22.98)	45 (30.4)	12 (8.11)	30.8	1
Fedora	73 (49.32)	44 (29.73)	27 (18.24)	4 (2.71)	25.8	2
SUSE	87 (58.78)	35 (23.65)	24 (16.22)	2 (1.35)	23.7	3
Dream Linux	97 (65.54)	35 (23.65)	16 (10.81)	—	21.5	4

Note: Figures in parenthesis denote percentage

Table 3. Knowledge of library automation open source software

Software	Not known	Partially known	Known	Fully known	Weighted arithmetic mean	Rank
CDS/ ISIS	21 (14.19)	25 (16.89)	87 (58.78)	15 (10.14)	39.2	1
NewGenLib	49 (33.11)	67 (45.27)	27 (18.24)	5 (3.38)	18.4	4
KOHA	112 (75.67)	26 (17.57)	10 (6.76)	—	19.4	3
PhpMyLibrary	127 (85.81)	17 (11.49)	4 (2.7)	—	17.3	5
OpenBiblio	133 (89.86)	15 (10.14)	—	—	16.3	6
Library Management System	44 (29.73)	61 (41.22)	34 (22.97)	9 (6.08)	30.4	2

Note: Figures in parenthesis denote percentage

Table 4. Knowledge of digital library open source software

Software	Not known	Partially known	Known	Fully known	Weighted arithmetic mean	Rank
GSDL	17 (11.49)	35 (23.65)	78 (52.70)	18 (12.16)	39.3	1
DSpace	47 (31.76)	31 (20.95)	59 (39.86)	11 (7.43)	33.0	2
E-Prints	67 (45.27)	28 (18.92)	48 (32.43)	5 (3.38)	28.7	3
CDSware	91 (61.49)	57 (38.51)	—	—	20.5	4

Note: Figures in parenthesis denote percentage

The analysis of data shows that maximum number of respondents possess knowledge on GSDL (weighted arithmetic mean of 39.3) followed by DSpace, E-Prints and CDSware.

6.6 Mode of Acquiring Knowledge on OSS

There are various methods of acquiring knowledge on OSS by the LIS professionals and data collected on this and been tabulated in Table 5.

Table 5. Methods of acquiring knowledge on OSS

Methods	No. of responses	Percentage
Formal education/training	117	79.06
Informal education/training	72	8.65
From colleagues/friends	63	42.57
Trial and error basis	85	57.44
Self study	41	27.71

As per the analysis of data in Table 5, as high as 117 responses (79.06 %) indicates that the basic method of acquiring knowledge on OSS is formal education/training followed by other methods such as trial & error basis (57.44 %), informal education and training (48.65 %), from colleagues/friends (42.57 %) and self study (27.71 %).

6.7 Use of Open Source Operating System

The analysis of data collected indicates that 21 respondents (14.19 %) opined the use of OS operating system positively where as 127 respondents (85.81 %) opined negatively. The study further attempts to find out the reasons for not using OS operating system in libraries by the LIS professionals and the collected data have been tabulated in Table 6.

Table 6. Reasons for not using OS operating system

Reason	No. of responses (n=127)	Percentage
Use of commercial software	127	100
Less user-friendly	105	82.68
Inadequate knowledge	87	68.51
Expert-dependent	77	60.63
Feel risk	110	86.62

The analysis of data of Table 6 shows that out of 127 respondents who opined negatively towards the use of OS operating system, all (100 %) favour commercial software. The other reasons stated by the respondents are feeling risk (86.62 %), less-user friendly (82.68 %), inadequate knowledge (68.51 %) and expert dependency (60.63 %).

6.8 Use of Library Automation OSS

Regarding the use of OSS for library automation, 18 respondents (12.16 %) opined positively and 130 respondents (87.84 %) opined negatively. Further, attempts were made in the study to find out the reasons for non use of OSS and the collected data have been tabulated in Table 7 which shows that the main reason is feel risk (83.65 %). The other reason for this are less user friendly (71.07 %). inadequate knowledge (66.67 %), expert dependent (64.78 %), use of commercial software (60 %), and other reason (44.62 %).

Table 7. Reasons for not using OSS for library automation

Reason	No. of responses (n=130)	Percentage (%)
Use of commercial software	78	60.00
Less user-friendly	113	71.07
Inadequate knowledge	106	66.67
Expert-dependent	103	64.78
Feel risk	133	83.65
Others	58	44.62

6.9 OSS Use for Creation of Digital Library/ Institutional Repository

The respondents were asked about the use of OSS in creation of DL/IR in library. The analysis of the data shows that out of 148 respondents, 05 (3.38 %) opined positively regarding the use of OSS where as 143 (96.62 %) opined negatively. Further attempts were made to find out the reasons for non-use of OSS for creation of DL/IR and the analysis of data of Table 8 reveals that lack of support from authority (93.7 %) is the main reason for this.

Table 8. Reasons for not using OSS for creation of DL/IR

Reason	No. of responses (n=143)	Percentage (%)
Use of commercial software	03	2.09
Lack of support from authority	134	93.7
Inadequate knowledge	072	50.34
Expert-dependent	101	70.62
Less user-friendly	79	55.24

6.10 Future Trends of OSS in Libraries

The respondents were asked about their suggestions on future trends of OSS in libraries data analysis indicates that as high as 97 (65.54 %) respondents out of 148 opined towards a negative trends. Also, 31 (20.95 %) opined towards a positive trend and 20 respondents (13.51 %) did not comment on this.

7. SUGGESTIONS

On the basis of findings, followings suggestions have been made to enhance the use of OSS in engineering college libraries by LIS professionals of Odisha.

- Adequate training provision for LIS professionals of engineering colleges of Odisha need to be developed by the parent institutions to train them on OSS and its use in libraries.

- Although LIS professionals of Odisha possess fair knowledge on different OSS, its use in engineering college libraries are not up to the satisfactory level. Hence, the authorities of these libraries need to be cooperative towards LIS professionals and some autonomy must be given to them, so that they can prove their talent in using OSS comfortably.

- It is seen that even if a good number of LIS professionals possess knowledge on OSS for creation of DL/IR, the availability of them in engineering college libraries of Odisha are quite few in numbers due to lack of cooperation from authorities. Hence, a conducive library environment and well-defined policy need to be developed by the parent institutions, which will be helpful for LIS professionals to create DLs/IRs by using OSS.

- The LIS professionals need to be encouraged by the authorities to use OSS for library automation, who can't afford for proprietary/commercial software due to financial constraints. The authorities need to provide necessary infrastructure and moral support to LIS professionals to not to hesitate to take a risk.

- The OSS needs to introduce in the course curriculum of the LIS courses of Universities of Odisha, so that the future LIS professionals will be well trained in using OSS in libraries.

- The LIS professionals of engineering college of Odisha need to be more IT savvy and should possess a positive attitude with adequate knowledge on OSS through formal and informal training programs, so that they will be capable and confident in using OSS for various library applications.

- The OSS developers and experts need to play a important role to make it popular among LIS professionals of engineering colleges of Odisha through publications of good literature on OSS, organising workshop/seminars on OSS, etc.

8. CONCLUSIONS

The OSS is a software development and distribution model where the source code of program is made freely available with the software itself so that one can modify it as per requirement and also distribute it provided they abide by the accompanying license. Thus, the freedom to modify the software has made it popular, more specifically in libraries, which has facilitated the designing of software in providing library services as per the users' requirement. The OSS is also an economical alternative to libraries' dependence upon proprietary/commercial software. It ensures more functional library system and services. However, OSS is not always easy to use and is therefore largely inaccessible to many libraries. The basic problem is that most OSS are written by programmers who do not understand the end-user needs and whose software is often complex and difficult to use.

Further, it lacks proper documentation and is more expert dependent. But it is fact that OSS is essential if libraries are to develop software and systems that meet their patrons' needs satisfactorily. Hence, the LIS professionals need to develop a positive attitude towards use of OSS to tailor various library services in their own ways.

The paper finds that although the LIS professionals of engineering colleges of Odisha have knowledge on OSS, their uses in libraries are in budding stage. A cooperative and participatory organisational system, positive attitude of authorities and LIS professionals, and proper training provision for LIS professionals need to be developed for the widespread use of OSS in these libraries.

REFERENCES

1. Cervone, F. The open source option. *Library Journal Net Connect*, Summer 2003a, 8-12.

2. Giri, R. & Sengar, D.S. Use of open source software in the learning resource center of Indira Gandhi Institute of Technology: A case study. *Annals Lib. Inf. Stud.*, 2011, **58**, 41-48.

3. Biswas, G & Paul, D. An evaluative study on the open source digital library software for institutional repository: Special reference to DSpace and greenstone digital library. *Inter. J. Lib. Inf. Sci.*, 2010, **2**(1), 1-10. http://www.academicjournals.org/ijlis (accessed on 25 September 2011).

4. Bissels, G. Implementation of an open source library management system–experiences with Koha 3.0 at the Royal London Homoeopathic Hospital, open source software use in libraries 11. *Program*, 2008, **42**(3), 303-14.

5. Goh, D.H.L. & Chua, A. A checklist for evaluating open source digital library Software. *Online Inf. Rev.*, 2006, **30**(4), 360-79.

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