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Awareness and usage of Cloud Computing Application among LIS Professionals: A case study of 17 Indian University Libraries

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Awareness and usage of Cloud Computing Application among LIS Professionals: A case study of 17 Indian University Libraries

Abstract

This study was conducted in seventeen Indian university Libraries to assess the familiarity and usage of cloud computing applications among Library and information Science professionals. The investigator collected responses from 56 number of LIS professionals working at 17 Indian University Libraries, through a structured questionnaire. Results revealed that the usage of cloud computing applications in library operation and services is not very significant. However, LIS professionals are using those applications for different personal purposes like, Store Files Online, Store Personal Videos and photographs online and for Collaborative writing. However, majority of the librarians showed their concern over the security. Further, the research found that the LIS professionals are quite interested to use Cloud computing in library operation and services. However, majority of the librarians showed their concern over the security. The findings of this study have both theoretical as well as practical implications for Librarians, policy makers in the universities.

Keywords

Cloud Computing, Libraries, Library Services, Cloud Service provider

INTRODUCTION AND REVIEW OF LITERATURE

Latest technological development has brought a remarkable transformation in every field, and library science is not an exception to it. “Cloud-based services are set to transform the way libraries work, unleashing librarians from the admin burden to focus on services for students and researchers (JISC, 2011)”. Cloud computing is not a new technology on the web but it is a new form of computing. Cloud computing is used by almost everyone those connected to internet on a regular basis. Whether they are using Google’s Gmail, organizing photos on Picasa or searching the Web with Bing, they are engaged in cloud computing. “Cloud computing is a kind of computing technology which facilitates in sharing the resources and services over the internet rather than having these services and resources on local servers/ nodes or personal devices. The combination of servers, networks, connection, applications and resources is defined as 'cloud'. Cloud computing is acting as a resources pooling technology for accessing infinite computing services and resources as per demand of users and can be compare with models of pay as you use or utility model same as used for mobile services usages and electricity

consumption.” (Kaushik & Kumar, 2013). There are three service models of Cloud Computing such as Infrastructure as a Service (IaaS), Platform as a Service (PaaS), & Software as a Service (SaaS). IaaS offers necessary computing resources like (processing, storage, networks, and operating resources) over the Internet. PaaS offers platform (Google App Engine) to run the user created or acquired applications on the Internet. SaaS provides applications and software (Google Docs) on cloud which can be accessed through any device having web browser. According to (Mavodza, 2013) “ libraries are using the cloud for putting together user resources, i.e. using Software as a Service (SaaS), such as in library catalogues, WorldCat, Googledocs, and the aggregated subject gateways like SUMMON, and others; the web Platform as a Service (PaaS) as in the use of GoogleApp Engine; or Infrastructure as a Service (IaaS) as in the use of D-Space, FEDORA, and others. The cloud is confirmed as a facilitator in storing and accessing information in addition to providing a unified web presence with reduced local storage capacity challenges”

Few research studies has been made on cloud computing. Yuvraj (2013) made a survey to find, how librarians in Indian Central Universities are using Cloud Computing tools into their daily library services and works. Result show that librarians are heavily dependent on cloud computing tools and majority of them are using various devices and want to imply the same to improve library services. Again, economics, delivery models and service layers and the user`s preference of cloud computing are the core drivers for using those applications in library, but majority of the librarians showed their concern over the security. Abid M.H. et.al (2012) made a survey in 4 different universities of Faisalabad, Pakistan to find, the perception and what sort of issue, the IT administrators can face while using cloud computing. Findings show that most of the participants are familiar with cloud computing but unfortunately some of them are not much clear due to lack of resources. 91% participants replied that using of cloud computing is a highly security risk. Mahalakshmi & Ally (2012) conducted a study to identify the awareness and applications of cloud computing by librarians of engineering colleges of coimbatore district and found that most of the respondents (98.2%) are aware of the term cloud computing and 87.7% of the respondents are aware of the application of cloud computing in libraries. Half of the respondents (52.6%) are of the opinion that it is feasible to apply cloud computing in libraries in Indian context.

Many studies have examined the overall concept of Cloud Computing. However, research on librarian's usage and acceptance level of Cloud Computing is not very significant. Again no study has been made before to find awareness and usage of cloud Computing among the library professionals in Odisha. The main purpose of this paper is to explore awareness and usage of cloud computing application among library professionals in University libraries

STATEMENT OF THE PROBLEM AND ITS SIGNIFICANCE

In the present study "Awareness and usage of Cloud Computing Application by LIS professionals: A case study of University Libraries of Odisha" aims to find out the awareness and usage of cloud computing application among the university libraries of Odisha.

- 2.1 Are the library professionals fairly familiar with the concept of cloud computing?
- 2.2 Whether the respondents are capable to evaluate and use different applications of cloud computing in libraries?
- 2.3 For what purpose these tools are used in maximum i.e. whether for personal purposes or professional purposes?
- 2.4 Whether any particular cloud computing applications are most used by particular university libraries or all the university libraries are using all the applications in the same proportion?
- 2.5 What kinds of benefits are they getting by implementing these applications on their library?
- 2.6 Which cloud services are being used by the university libraries of Odisha?
- 2.7 Which Cloud service provider is being using by university libraries most for "cloud computing operations"?

Till date some surveys are already done for investigating the usage of cloud computing in university libraries of India and abroad. But, there was no survey made earlier in Odisha. So, the investigator attempts to investigate the awareness and usage of Cloud Computing applications by LIS professionals of University libraries of Odisha.

AIMS AND OBJECTIVES:

The main Objective of the study is to make an investigation into the awareness, usage and attitude of LIS professionals towards cloud computing applications and their integration into the Library Operation and Services In the university libraries of Odisha.

However, the present investigation, among other things, intends to achieve the following objectives:

- I.** To find out the degrees of familiarity of the LIS professionals of university Libraries in Odisha, with Cloud Computing Application.
- II.** To find, the Purpose of Use of cloud computing by LIS Professionals in university libraries of Odisha
- III.** To find out the most popular Cloud Applications used by LIS professionals in the university Libraries of Odisha.
- IV.** What are the obstacle and problems in utilizing cloud computing Applications by LIS professionals of university libraries of

METHODOLOGY:

In the present survey the structured online questionnaire was prepared using Google Docs. The survey comprised four categories of questions: Use of Internet, Awareness and usage of Cloud Computing Applications, Opinion of Library Professional about Cloud Computing Application in Library, Measures for Increasing Cloud Computing Awareness among People. The questionnaire was distributed randomly among LIS professionals (Librarian, Deputy Librarian, Assistant librarians and Library technical assistants) working at 17 Indian University Libraries and a total of 56 responses were obtained from 17 University Libraries of Odisha. The data obtained from the survey are analyzed and the laid hypotheses are tested and also the findings are generalized.

SL. NO.	NAME OF UNIVERSITIES OF ODISHA
1.	Sambalpur university, burla
2.	Utkal university, BBSR
3.	Berhampur university, Bhanjavihar
4.	Revenshaw university, Cuttack
5.	Sri Jagannath Sanskrit viswavidyalaya, puri
6.	Fakir mohan university, Balasore
7.	North odisha university, Baripada
8.	Odisha university of agriculture & technology, BBSR
9.	IIT, BBSR
10.	VSSUT, Burla
11.	Kalinga institute of industrial technology, Deemed university
12.	Siksha o anusandhan university, Deemed university
13.	Centurion university of technology & management

14. National law university, cuttack
15. Central university, Koraput
16. NIT, Rourkela
17. Utkal university of culture

HYPOTHESES:

On the basis of both observations and experiences, the researcher has to build certain assumption in order to direct the research in a right direction. For the present investigation, the investigator has therefore, initially formulated the following hypotheses so as to prevent the possibilities of a blind research:

1. Most of the LIS professionals of University Libraries of Odisha, would not have been familiar with the concept of Cloud Computing.
2. The Application of Cloud Computing is higher in personal use than in Library operation and services.
3. Lack of awareness regarding the availability and usefulness of Cloud Computing Application is the major constraint for the non-use of those tools by LIS professionals of University Libraries of Odisha

ANALYSIS AND INTERPRETATION OF DATA

“Cloud computing” is the delivery of computing services over the internet. Cloud services allow individuals and institutions to use software and hardware that are managed by third parties at remote location. Cloud services include online file storage, social networking sites, webmail, online applications etc. The Cloud computing model allows access to information and computer resources from anywhere that a network connection is available.¹ Cloud computing offers real alternatives to IT field for improved flexibility and lower cost. Digital libraries are developing for software applications, platforms, and infrastructure as a service to IT department over the “cloud”. It also provides for better and easier management of data security, since all the data is located on a central server.²

So, in order to find the awareness and usage of applications of cloud based services among LIS professionals, the collected data from 56 number of LIS professionals has been analyzed and presented below.

Use of internet by the respondents

Internet is a network of networks that may work as a worldwide channel of communication, media for collaboration, media for knowledge and content sharing and much more. The question was designed to determine whether LIS professionals use internet or not. This could cover the way to understand the familiarity of the communities with the technology. The persons who are familiar with internet they can only take the advantage of cloud computing applications and can apply these technologies in their Library.

Table-1

Use of internet by Respondents

Whether using internet or not?	Number of respondent	In percentage
Yes	56	100%
No	0	0%

The table-1 depicts that all the respondents (100%) from all the 17 university libraries of Odisha indicated that, they use Internet which implies that the LIS professionals are well aware with the technology.

Purpose of using internet

The rapid growth of internet and its application has changed the traditional methods of communication, Sharing and library operation and service giving process. Today, internet has emerged as the most powerful medium for communication, information retrieval, entertainment, marketing and much more. In the present study, the investigator systematically gathered the responses of the LIS professionals indicating the usage of internet for different purposes as given in the questionnaire. The resultant data thus obtained under 5 broad purposes are enumerated in table-2.

Table-2

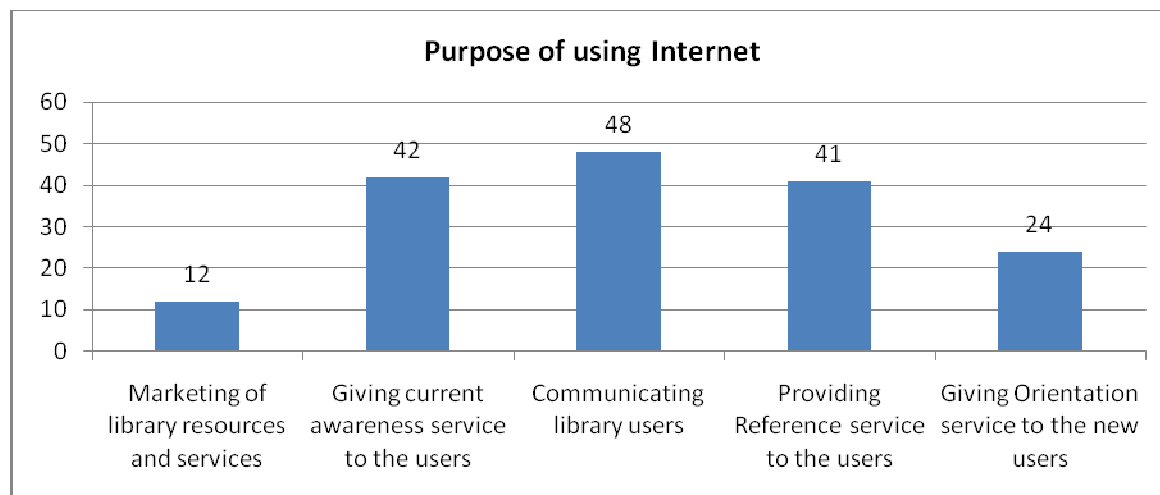
Purpose of using internet

Purpose of using Internet	No of respondent	In percentage
Marketing of library resources and services	12	21.4%
Giving current awareness service to the users	42	75%
Communicating library users	48	85.7%
Providing Reference service to the users	41	73.2%
Giving Orientation service to the new users	24	42.8%

The table-2 shows that a majority of the respondents 48(85.7%) use Internet for Communicating library users, followed by next majority 42(75%) for Giving current awareness service to the users and only 12(21.4%) use for Marketing of library resources and services.

Figure-1

Purpose of use of internet by the respondents



Familiarity of cloud computing concept amongst the respondents

The purpose of the question “Do you know about the concept of Cloud Computing?” Was to obtain a general understanding and familiarity of the academic communities with the term cloud computing. The table-3 and the figure-2, below provide illustration of the results.

Table-3

Familiarity of cloud computing concept

Familiarity of cloud computing concept	Number of respondents	In percentage
Yes	54	96%
No	2	4%

The table-3 shows that the 54 (96%) respondents of different university libraries are familiar with the concept of cloud computing. Means, majority of respondents are aware of this concept and they are not lagging behind.

Appropriate concept of cloud computing according to respondents

The purpose of this question was to cross check the response for former question (*“Do you know about the concept of Cloud Computing?”*) asked to LIS professionals, to find whether they really know the concept of cloud computing or not. Here, the investigator gave some of the concepts of cloud computing (both wrong and right) and asked them to choose the right one.

Table-4
Appropriate Concept of cloud computing according to respondents

Concepts of cloud computing	Number of respondents agreed towards this concept	Percentage
It is a type of computing that don't relies on sharing computing resources.	0	0%
The practice of Using Local Servers to store, manage and process data.	4	7.1%
The practice of using a network of remote servers hosted on the internet to store, Manage, and process data.	48	85.7%

The table-4 shows that, majority of the respondents i.e. 48(92%) choose that “the practice of using a network of remote servers hosted on the internet to store, manage, and process data” is the appropriate concept of cloud computing which is the right option, and rest of 7.1% choose, “the practice of using local servers to store, manage and process data” which is the wrong one and not presenting the concept of “cloud computing”. Remaining “4” respondents didn't respond to the query.

The data in the above table is evident that actually “48” (85.7%) respondents out of total 56 know the concept of Cloud Computing.

Benefits of cloud computing to university libraries

Benefits of cloud computing includes overall reduced costs, ease of use, avoiding hardware software purchasing costs, easy way of collaboration and many others. The purpose of this question “Do you know Cloud computing is having Following Benefits?” was to know the label of familiarity of ‘benefits of cloud based services’ amongst the respondents belonging to these universities.

Table-5
Benefits of cloud computing

Benefits of cloud computing	Number of respondents knew about these benefits	In percentage
Overall Reduced Costs	48	85.7%
Ease of Use/ Implementation	48	85.7%
Avoiding Hardware/ Software	48	85.7%
Easy Collaboration	48	85.7%

The table-5 depicts that 48 respondents i.e 85.7% of total respondents agreed with all the benefits of cloud computing. Means, all respondents are well familiar with all these benefits of cloud computing

Usage of cloud computing

As, the concept of cloud computing is new to this generation, it's level of usage may not fully spreaded over a broader area. So, the investigator asked the question 'Do you use Cloud Computing?', in order to know its use by LIS professionals in different university libraries of Odisha.

Table-6
Cloud computing usage by Respondents

Use of clod computing by university libraries	Number of respondents using	percentage
Yes	42	75%
No	10	17.8%

The above table clearly depicts that, "42" 75% of LIS professional of university libraries Odisha are using the applications of cloud computing and "10" 17.8% are not using cloud computing applications. Remaining "4" respondents didn't respond to the query.

Purpose of using cloud computing

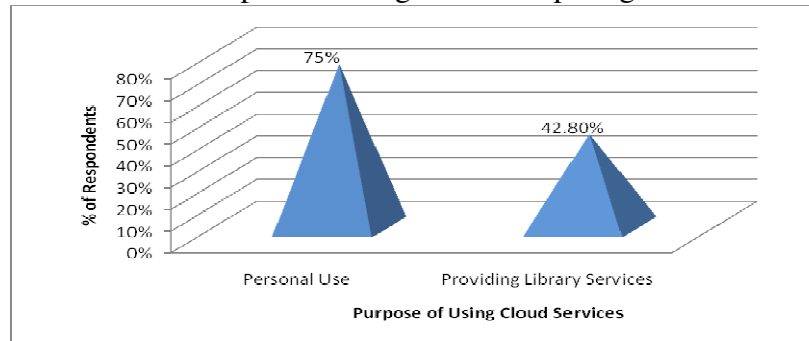
Cloud based services can be used by LIS professionals for personal as well as professional purposes. The purpose of this question was to know, whether the respondents using cloud based services for their personal use or for providing library services.

Table-7
Purpose of using cloud computing

Purpose of using cloud computing	Number of respondents	In percentage
Personal Use	42	75%
Providing Library Services	24	42.8%

The above table-7 depicts that 75% of total respondents are using cloud computing for their personal purpose and the rest 42.8% are using it for providing library services. Hence, moreover people are using this cloud computing for their personal purposes.

Figure-2
Purpose of using cloud computing



Using of cloud computing for different personal purposes

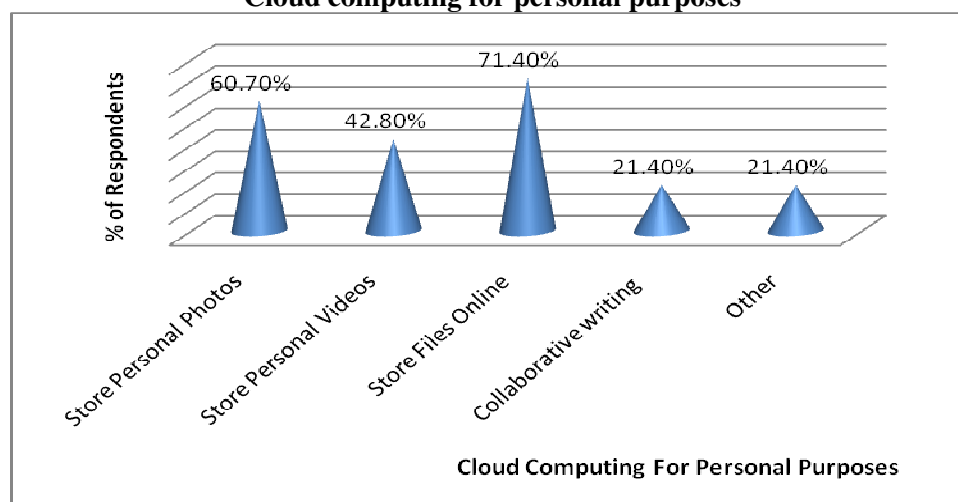
The investigator, through the question ‘Do you use cloud computing for following Personal Purposes?’ tried to find out the specific purpose for which most used cloud based services are being used by the respondents. Cloud based services can be used for many purposes like, Store Personal Photos, Store Personal Videos, Store Files Online, Collaborative writing, and many others.

Table-8 Cloud computing for personal purposes

Use cloud computing for personal purposes	Number of respondents	In percentage
Store Personal Photos	34	60.7%
Store Personal Videos	24	42.8%
Store Files Online	40	71.4%
Collaborative writing	12	21.4%
Other	12	21.4%

From the above table-8, it indicates that majority i.e. 40 (71.4%) respondents of total population are using cloud computing for “storing files online”. Then, next majority for storing personal photos (60.7%), followed by storing personal videos (42.8%) and lowest number i.e. only 12 (21.4%) use cloud computing for Collaborative writing. Hence, moreover people are using it for ‘storing files online’.

Figure-3
Cloud computing for personal purposes



Use of cloud computing for professional purposes

The investigator, through the question ‘Do you use cloud computing for following Professional Purposes?’ tried to find out the use of cloud based services for various professional purposes like, Collaborating with library users, Providing Reference Services, Collaborating with other librarians, Collaborative writing and many others.

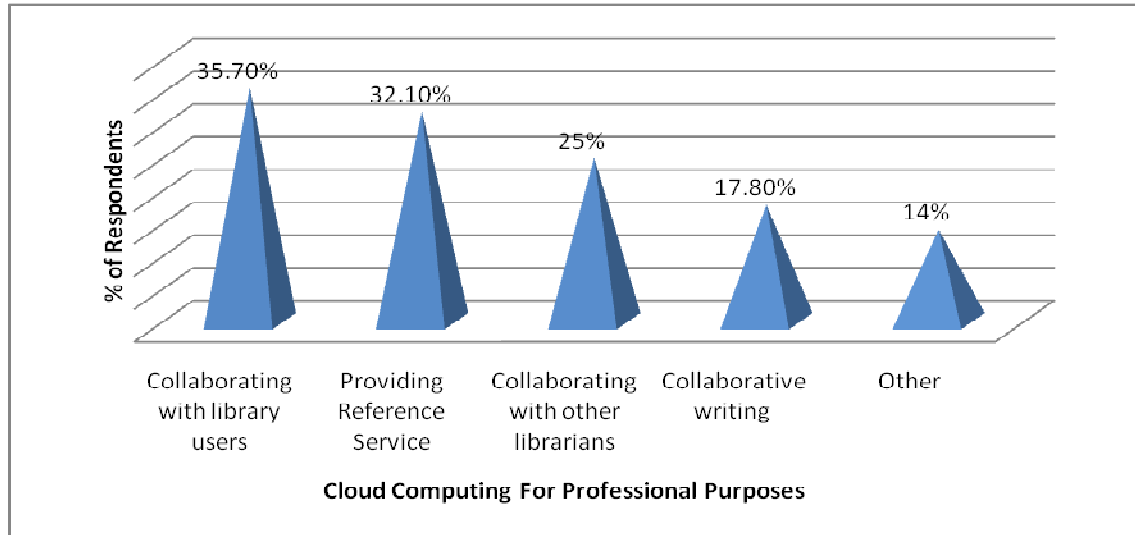
Table-9
Cloud computing for professional purposes

Use of cloud computing for professional purposes	Number of respondents	In percentage
Collaborating with library users	20	35.7%
Providing Reference Service	18	32.1%
Collaborating with other librarians	14	25%
Collaborative writing	10	17.8%
Other	10	14%

The table-9 depicts that maximum number of respondents i.e. 20 (35.7%) are using cloud computing for ‘collaborating with library users’, followed by next majority i.e. 18 (32.1%)

for ‘providing reference service’ and only 10(17.8%) (Lowest Number) use for collaborating writing.

Figure-4 **Cloud computing for professional purposes**



Cloud services being used in university libraries

There are different kinds of Cloud computing services available on the web as listed below in the table. Therefore the investigator, through this question tried to find out the most used cloud based services by LIS professionals of university libraries of odisha.

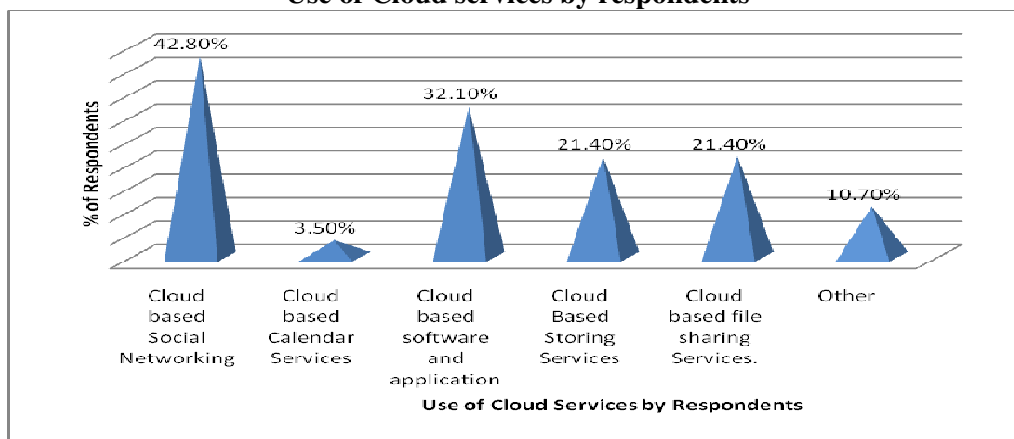
Table-10
Use of Cloud services by respondents

Use of Cloud services by LIS professionals	Number of respondents	In percentage
Cloud based Social Networking	24	42.8%
Cloud based Calendar Services	2	3.5%
Cloud based software and application	18	32.1%
Cloud Based Storing Services	12	21.4%
Cloud based file sharing Services.	12	21.4%
Other	6	10.7%

It is evident from the table-10, that maximum numbers i.e. 42.8% of respondents in university libraries of Odisha are using the ‘cloud based social networking’, followed by next majority i.e. 32.1% of them are using ‘cloud based software and application’. Then ‘cloud based storing services’ and ‘cloud based file sharing services’ are equally being used by 21.4% respondents,

and only 2(3.5%) use 'cloud based calendar services'. Hence Cloud based Social Networking services are most popular services being used by the LIS professionals.

Figure-5
Use of Cloud services by respondents



Different cloud service provider being used by respondents

Cloud computing operations include a numbers of services which can be term as 'cloud based services provided by different service providers. This service includes Mailing, custom social networking, information collection, files sharing, office application, forums and many others. So, in order to know the usage of all these services offered by cloud, the respondent made this question.

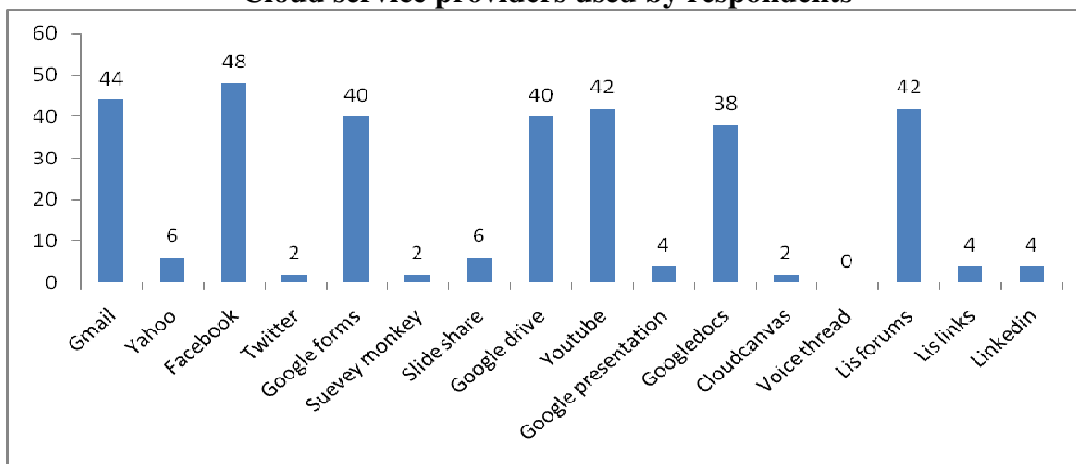
Table-11
Cloud service provider using by Respondents

Cloud provider service	Types	Number of respondents using	In percentage
Mailing	Gmail	44	78.5%
	Yahoo	6	10.7%
Social networking	Facebook	48	85.7%
	Twitter	2	3.5%
Information collection	Google forms	40	71.4%
	Survey monkey	2	3.5%
Files sharing	Slide share	6	10.7%
	Google drive	40	71.4%
	Youtube	42	75%

Video presentation and	Google presentation	4	7.1%
Office application	Googledocs	38	67.8%
	Cloudcanvas	2	3.5%
Forums	Voice thread	0	0%
	Lis forums	42	75%
Others	Lis Links	4	7.1
	Linkedin		

The table-11 depicting that, in mailing service Gmail is highly used by the respondents as compare to Yahoo i.e. 78.5%, and then in social networking around 48 out of 56 respondents are using Facebook which is of 85.7% of total respondents. Then in information collection service Google forms is highly familiar with respondents i.e. 71.4% as compare to survey monkey, in file sharing Google drive is having more popularity among respondents than Slideshare, in video and presentation service Youtube is more usable by respondents as compare to Google presentation i.e. 75%, in office application Google docs is having more popularity i.e. around 67.8 respondents are using it, then in forums services, only Lis forum is using by the respondents i.e. 75% and may be rest respondents are not using any of the forums, and lastly apart from all these service providers, Lis Links and LinkedIn is also used by few of the respondents.

Figure-6
Cloud service providers used by respondents



Reason behind not use of cloud computing

The investigator, through this question tried to find out the reasons behind not using of cloud computing operation. The reason may include lack of awareness, security data, loss of control, low speed internet connectivity, or administrative constraints.

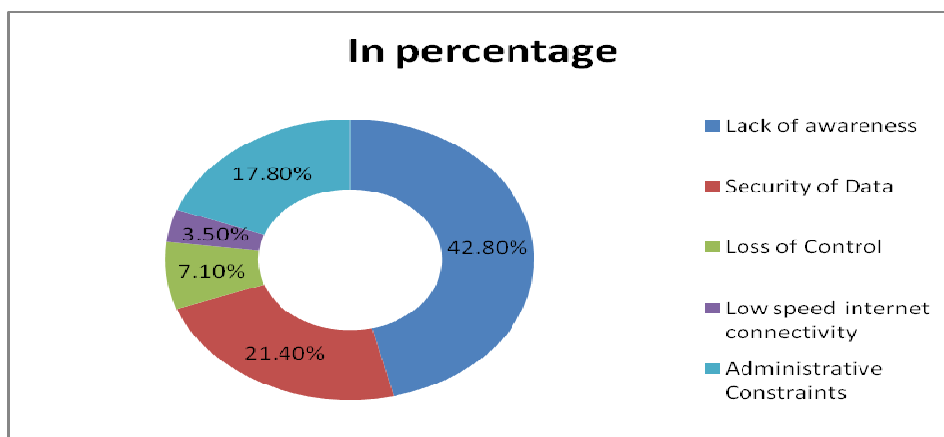
Table-12
Reason behind not using cloud computing

Reason behind not using cloud computing	Number of users	In percentage
Lack of awareness	24	42.8%
Security of Data	12	21.4%
Loss of Control	4	7.1%
Low speed internet connectivity	2	3.5%
Administrative Constraints	10	17.8%

The above table-12 indicates that, the main reason behind not using of cloud computing services is because of 'lack of awareness' amongst different library professionals of university libraries of Odisha i.e. of about 42.8% of total respondents. Then, 21.4% respondents because of 'security of data, then 17.8% because of 'administrative constraints', 7.1% because of loss of control, 3.5% because of low speed internet connectivity. Hence, due to lack of awareness, cloud based services are not being using in academic communities.

Figure-

Reason behind not using cloud computing



Methods to increase the awareness and use of cloud services

It is quite essential to overcome the situation in which LIS professionals lagging behind in making proper use of cloud services. With this objective, the investigator tried to find out what remedial steps may be under taken for popularizing and maximizing the use of cloud services in the University libraries under survey. The resultant data thus obtained has been presented in the table-13

Table-13
Things increase the awareness and use of cloud computing

Methods to increase the awareness and use of cloud computing	Number of users	In percentage
Sufficient number of computers in the Library	26	46.4%
High bandwidth Internet connectivity	26	46.4%
Tutorials/Demonstrations/Trainings on the use of Cloud Computing	36	64.2%
Seminars/Workshops	34	60.7%
other	4	7.1%

The table-13 depicts that around 64.2% of university libraries of odisha are agreed with the terms that, 'Tutorials/Demonstrations/Trainings is necessary to increase the awareness and use of cloud computing. Then 60.7% of respondent agreed that, seminars/workshop is required for increase the awareness and use of cloud computing. Then 46.4% of respondents believe that, 'sufficient numbers of computers in the library' and 'high bandwidth internet connectivity' is require in order to increase the awareness and use of cloud computing.

FINDINGS AND DISCUSSION

As a result of systematic analysis of data obtained for the present study, the investigator observes the following facts about the Awareness and usage of Cloud Computing Application by LIS professionals among the university libraries of Odisha.

1. All the respondents (100%) from all the considered universities of odisha indicated that, they use Internet which implies that the university libraries are well aware with the technology.
2. The academic communities of all the considered university libraries of Odisha use Internet for all the five important purposes asked in the question; Marketing of library

resources and services, Giving current awareness service to the users, Communicating library users, Providing Reference service to the users, Giving Orientation service to the new users. Here it is important to note that higher proportion of respondents of all considered university libraries of Odisha use Internet for Communicating library users, Giving current awareness service to the users, and Providing Reference service to the users.

3. When question has asked about familiarity of cloud computing concept, then 54 respondents i.e. 96% answered that they are aware of this. But, when in subsequent question asked for the appropriate concept of cloud computing, then surprisingly 48 respondents i.e. 85.7% gave the right response. So, it has concluded that, some of the respondents were answered it wrongly that they known about cloud computing.
4. Around 85.7% respondents from all the considered university libraries are aware with the term cloud computing. (Thus, hypothesis-1, i.e. *“The concept of Cloud Computing is the recent origin. Therefore, most of the LIS professionals of University Libraries of Odisha, would not have been familiar with the concept of Cloud Computing”* is rejected)
5. Majority of respondents are using cloud computing for their personal purposes only. (Thus, hypothesis-2, i.e. *“The Application of Cloud Computing is higher in personal use than in Library operation and services”* is accepted)
6. More use of cloud computing for professional purposes is for Collaborating with library users and Providing Reference Service to the users.
7. A majority of the LIS professionals of university libraries of Odisha are using social networking tools and then Cloud based software and application. The response to the other tools are not very significant. The university libraries are not aware of the use of Cloud based Calendar Services.
8. Different type of cloud service providers are taken in to consideration to know it's usage label. From these question, it's found that 'Gmail' is mostly used by the respondents for mailing service as compare to Yahoo, then from social networking tools 'Facebook' is widely used as compare to Twitter, for information collection service 'Googleforms' is mostly used by the respondents as compare to survey monkey, then for file sharing service 'Google drive', for Video and presentation service 'Youtube', for Office

application service 'Googledocs', and for Forums service' Lis forum' is being using widely by all university libraries of odisha.

9. In a question, when the investigator tried to asked about the familiarity of cloud computing concept, around 96% of the total respondents answered that, they are familiar with this concept. But, when they are asked for reason behind not using of cloud computing, they answered that it's because of lack of awareness. So, for further clarification a telephonic conversation was took place with the respondents and it is found that the respondents are aware with the concept of Cloud Computing, but they are not through about all the features and application of Cloud Computing in Library. Again they are feeling insecure to put data in the Cloud. (Thus, hypothesis-3, i.e. *"Lack of awareness regarding the availability and usefulness of Cloud Computing Application is the major constraint for the non-use of those tools by LIS professionals of University Libraries of Odisha"* is accepted)
10. In order to increase the awareness and use of cloud computing, the respondents suggested for "Tutorials/Demonstrations/Trainings on the use of Cloud Computing, and also the majority of respondents of all the considered university libraries marked for "Seminars/Workshops", which indicates that the university libraries are lagging behind the maximum use of these applications because of their less technical knowledge on those applications of cloud computing. Sufficient number of computers in the Library and High bandwidth Internet connectivity are also the great strategies to increase the awareness and use of cloud computing, as indicated by the respondents of all the considered university libraries of odisha.

CONCLUSION

The rapid development in technology creating a lot of opportunities to library professionals. But, there is a gap between the rapidly growing technologies and the usage of those technologies by library professionals. Cloud computing is a new technology which allows them to avoid locally hosting multiple servers and equipments and constantly dealing with hardware failure, software failure, upgrades and compatibility issues. Cloud computing can simplify processes and save time and money. Although, cloud computing is more economic and

cost-saving than the traditional computing methods, very few people use it for library operation and services and it is used more for personal purposes. The question of trust over the cloud service provider, data protection and broadband accessibility hinders its implementation on a larger scale.

REFERENCE

Abid M.H. et.al (2012) Cloud Computing: A General User's Perceptions and Security Issues at Universities of Faisalabad, Pakistan. *IJCSI International Journal of Computer Science Issues*, Vol. 9, Issue 5, No 2

Adam K.L. Wong, Andrzej M. Goscinski, A unified framework for the deployment, exposure and access of HPC applications as services in clouds, *Future Generation Computer Systems*, Volume 29, Issue 6, August 2013, Pages 1333-1344

Bansode, S.Y., & Pujar, S.M.(2012). Cloud computing and libraries. *DESIDOC Journal of Library and Information Technology*, 32(6), 506-512.

Ben Martini, Kim-Kwang Raymond Choo (2012) An integrated conceptual digital forensic framework for cloud computing, *Digital Investigation*, Volume 9, Issue 2, Pages 71-80

Corrado Federici (2014) Cloud Data Imager: A unified answer to remote acquisition of cloud storage areas, *Digital Investigation*, Volume 11, Issue 1, Pages 30-42,

Fei Tao, Ying Feng, Lin Zhang, T.W. Liao, (2014) CLPS-GA: A case library and Pareto solution-based hybrid genetic algorithm for energy-aware cloud service scheduling, *Applied Soft Computing*, Volume 19, Pages 264-279

Han, Y. (2010). On the clouds: a new way of computing. *Information Technology and Libraries*, 29 (2), 87-92

Hoy, Matthew B. (2012) Cloud Computing Basics for Librarians, *Medical Reference*
Jean-Paul Ebejer, Simone Fulle, Garrett M. Morris, Paul W. Finn, The emerging role of cloud computing in molecular modelling, *Journal of Molecular Graphics and Modelling*, Volume 44, July 2013, Pages 177-187

JISC (2011) Saving libraries: The battle for time & resources. Cloud-based library services.(32). Retrieved from: <http://www.jisc.ac.uk/inform/inform32/SavingLibraries.html>

Kaushik, A. & Kumar, A. (2013). Application of cloud computing in libraries. *International Journal of Information Dissemination and Technology*, 3(4), 270-273

Liu, W., & Cai, H. H.(2013). Embracing the shift to cloud computing: Knowledge and skills for systems librarians. OCLC Systems and Services, 29(1), 22-29

Mahalakshmi, K. & Ally S, S.(2012). Awareness and application of cloud computing in Indian libraries: a study among librarians of engineering colleges of coimbatore district. International Conference on Cloud Computing Technologies, Applications and Management, ICCCTAM

Mavodza, J. (2013) The impact of cloud computing on the future of academic library practises & services. New Library World . 114(3/4). 132-141.

Nabil Sultan (2014)Making use of cloud computing for healthcare provision: Opportunities and challenges, International Journal of Information Management, Volume 34, Issue 2, Pages 177-184,

Yang Jing, Liao Zhijiang, Ye Suping (2012)The Community Library Anniance Based on Cloud Computing, Procedia Engineering, Volume 29, Pages 2804-2808

Yang Jing, Liao Zhijiang, Ye Suping (2012) The Community Library Anniance Based on Cloud Computing, Procedia Engineering, Volume 29, , Pages 2804-2808

<http://www.odisha.gov.in/portal/ViewDetails.asp?vchglinkid=GL014&vchplinkid=PL070>