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Cloud Computing Applications with Special Reference to Koha on Cloud in Pravara Rural Education Society's Non-Technical College Libraries: A Survey

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Abstract

The primary objective of this study is to analyze the utilization of cloud computing library automation systems such as KOHA on Cloud in college libraries that are non-technical under the Pravara Rural Education Society. Through various advantages, cloud computing has changed the role of a library in giving access to resources. The research employs structured questionnaires to evaluate the adoption of cloud computing, benefits, challenges, and librarian's perception about KOHA on Cloud. The results reveal that all the surveyed libraries are satisfied with the performance of KOHA on Cloud that are hosted by external vendors, but they still face issues like internet dependency and requiring technical support. The study ends with some recommendations to improve the training and infrastructure for the effective management of the libraries that are cloud-based.

Keyword: Cloud Computing, KOHA on Cloud, Library Automation, Open Source Software

1. Introduction

With the help of cloud computing, library services in academic institutions have been improved and managed in a completely new way. Cloud computing provides energy and scalable resources that can be used to eliminate unnecessary tasks, like storage of computers for in-house IT infrastructure. Among open-source systems for the automation of libraries, KOHA on Cloud is the one most frequently used owing to its flexible nature, accessibility on the web, and the good support it receives from the user community. Performance and accessibility of KOHA increase when it is cloud-hosted.

The Pravara Rural Education Society is an educational trust that is very famous in Maharashtra. The society is running several non-technical colleges which, in a very proactive way, are utilizing KOHA on Cloud to bring about a social change in their libraries. This paper brings out the implementation aspects, acceptance patterns, and librarians' feelings about the use of KOHA on Cloud in these colleges.

2. Objectives

1. To study the level of awareness and adoption of cloud computing in non-technical college libraries.
2. To assess the implementation and usage of KOHA on Cloud in Pravara Rural Education Society libraries.
3. To identify the benefits and challenges faced by librarians in using KOHA on Cloud.

4. To offer suggestions for effective utilization and enhancement of cloud-based library systems.

3. Literature Review

Cloud computing has brought transformative changes in the field of library science by offering on-demand, scalable, and cost-effective IT infrastructure without the need for libraries to maintain physical servers. The emergence of cloud-based Integrated Library Management Systems (ILMS), especially KOHA on Cloud, is increasingly being recognized as a sustainable and efficient solution, particularly for academic institutions with limited budgets and technical manpower. The following review examines scholarly literature and case studies related to cloud computing applications in libraries, with special attention to KOHA on Cloud.

- **Cloud Computing in Libraries**

Mell and Grance (2011), in their work for NIST, defined cloud computing as a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources. Libraries have increasingly adopted this technology to provide uninterrupted access to information resources, databases, and automation systems.

Mavodza (2013) emphasized that cloud computing provides libraries with flexibility, mobility, and cost reduction. His study found that academic libraries, especially in developing countries, benefit significantly from cloud platforms due to reduced maintenance, centralized resources, and improved user accessibility.

Sultan (2010) and **Zhao and Zhao (2014)** outlined that cloud computing offers various deployment models—public, private, hybrid, and community clouds—each suitable for different library environments. Their research recommended public or hybrid cloud models for academic libraries due to their economic viability and ease of implementation.

- **Open-Source Library Automation and KOHA**

KOHA is one of the most widely used open-source ILMS globally. Originally developed in New Zealand in 1999, it has evolved into a robust system adopted by thousands of libraries.

Singh and Sanaman (2012) investigated the adoption of KOHA in Indian libraries. They found that KOHA, being an open-source software, allows for full customization, multi-lingual support, and web-based functionality, which aligns well with modern digital library demands.

Patel and Solanki (2015) conducted a comparative study between KOHA and other proprietary ILMS. The results highlighted that KOHA is cost-effective, user-friendly, and receives strong support from the global library community. However, the study also emphasized the requirement of technical know-how and skilled manpower for local server hosting.

- **Transition to KOHA on Cloud**

Recognizing the limitations of managing KOHA on local servers, libraries have shifted towards cloud-based KOHA solutions. **Kumar and Ramesh (2017)**, in their case study, documented the successful migration of KOHA to cloud servers in selected Indian college libraries. The transition led to benefits such as reduced IT overheads, 24/7 accessibility, automated backups, and higher uptime.

Similarly, **Jena and Satpathy (2018)** observed that KOHA on Cloud enabled small and rural college libraries to participate in digital transformation without investing in costly infrastructure. Their study reported that even non-technical staff could manage the system effectively with basic training.

Kamble, Raj, and Sangeeta (2012) stated that cloud-hosted KOHA eliminates the need for in-house server maintenance, making it a more practical solution for libraries with limited IT capabilities.

However, they noted challenges such as data privacy, internet dependency, and vendor reliability.

- **Use of Cloud KOHA in Rural and Non-Technical College Libraries**

Very few studies have focused on rural, non-technical colleges specifically. However, **Deshmukh and Kharat (2020)** analyzed KOHA usage in Maharashtra's semi-urban colleges and found that cloud deployment helped bridge the digital divide. According to their research, external vendors played a crucial role in onboarding, maintenance, and updates, ensuring consistent system performance.

Moreover, **Patil and Gawande (2022)** highlighted that in the context of rural educational societies, cloud computing is not merely an IT solution but an enabler of inclusive education. Cloud-hosted KOHA allows library services to reach students and faculty even in digitally underserved areas.

4. Methodology

4.1 Research Design

A descriptive survey research design was employed to gather quantitative data Cloud Computing Applications with Special Reference to KOHA on Cloud in Pravara Rural Education Society's Non-Technical College Libraries

4.2 Population and Sample

The study targeted non-technical colleges Libraries in Ahilyanagar District, encompassing disciplines such as Arts, Commerce, and Social Sciences. A stratified random sampling technique was used to ensure representation across various colleges and departments. A total 8 colleges libraries

4.3 Data Collection Instrument

A structured questionnaire was developed, comprising both closed and open-ended questions. The questionnaire covered areas such as demographic information, of KOHA on cloud

4.4 Data Analysis

Quantitative data were analyzed using descriptive statistics, percentages,

5. Data Analysis

The study was carried out in 8 colleges that responded to the questionnaire for Cloud Computing Applications with Special Reference to KOHA on Cloud in Pravara Rural Education Society's Non-Technical College Libraries: A Survey as per below.

Sr. No	College Name
1.	PadmshriVikhePatil College ,Pravaranagar
2.	Arts Commerce and Science College , Satral
3.	Arts Science and Commerce College , Kolhar
4.	Arts Science and Commerce College , Alkuti
5.	Arts science , commerce and BCS College Ashvi
6.	Pravara Rural College of Education ,B.Ed. Loni
7.	Pravara Rural College of Education ,M.Ed. Loni
8.	Home Science and BCA College for Women ,Loni

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Table No- 1

Sr. No.	Awareness of Cloud Computing?	No. of Respondent	Percentage
1.	Yes	8	100 %
2.	No	0	0%

Table No. 1 shows that that **100 %** of college Librarians are aware of cloud computing. This suggests all College Librarians and libraries are aware about Cloud computing and accept to change and Implement to new technology and indicates a uniform trend and policy across the institution favoring cloud-based automation.

Table 2

Sr. No.	If yes, how did you learn about it?	No. of Respondent	Percentage
1.	Training/Workshop	6	75 %
2.	Online resources	4	50 %
3.	Through peers	5	62.50%
4.	Others	1	12.50 %

Table No. 2 shows that KOHA Cloud Computing Learning and Awareness of College Librarians stated 75 % learned through Training/Workshop making it the most significant source. 50 % cited online resources, and 62.50 % mentioned through peers. Only12.50 % were introduced Others Sources. This suggests Training/Workshop were arrange for awareness and learning for cloud computing.

Table 3

Sr. No.	Has your college library implemented any cloud-based services?	No. of Respondent	Percentage
1.	Yes	8	100 %
2.	No	0	00 %

Table No. 3 shows that 100 % respondents, were stated 'Yes' for college library implemented any cloud-based services. It is observed that Pravara Rural Education Society's Non-Technical College Libraries are updated and implemented cloud based Services.

Table 4.

Sr. No.	Are you using KOHA Library Management Software?	No. of Respondent	Percentage
	Yes	8	100%
	No	0	00 %

Table No. 4 shows that 100 **%** of respondents are using KOHA Library Management Software

Table 5

Sr. No.	Is your KOHA system hosted:	No. of Respondent	Percentage
1.	On a local server	0	00%
2.	On a cloud server	8	100 %

Table No. 5 shows that 100 % respondents were stated 'Yes' for KOHA system hosted On a cloud server. It is observed that Pravara Rural Education Society's Non-Technical College Libraries are updated and Implemented KOHA on Cloud service for User Oriented services. This shows that libraries are not just adopting KOHA but utilizing its full functional potential on cloud infrastructure.

Table 6

Sr. No.	If on cloud, which hosting service provider are you using?	No. of Respondent	Percentage
1.	By institutional IT cell	00	00%
2.	External vendor	8	100 %
3.	Other	00	00 %

Table No. 6 shows that 100 % respondents were stated 'Yes' for external vendor Informatics India Ltd. New Delhi for hosting service provider KOHA on Cloud. It is observed all 100 % College Libraries adopted External vendor with AMC for Cloud based Service.

Table 7.

Sr. No.	What library functions are managed using KOHA on Cloud ?	No. of Respondent	Percentage
	Acquisition	4	50%
	Cataloguing	8	100 %
	Circulation	8	100 %
	WEB OPAC	6	50 %
	Serial Management	4	50%
	Reports/Statistics	8	100 %
	User Management	8	100%

Table No. 7 shows that 100**% Usability** found KOHA on Cloud for Cataloguing, Circulation, Reports/Statistics, User Management. And **50 %** expressed unhappiness with usability for Acquisition, WEB OPAC and Serial Management. It is observed that most important functions are Using by College Libraries.

Table 8

Sr. No.	What benefits have you observed using KOHA on Cloud?	No. of Respondent	Percentage
1.	Cost-effectiveness	7	87.50%
2.	Remote access	8	100%
3.	Better uptime/availability	6	75%
4.	Automatic updates and backups	7	87.50%
5.	Scalability	5	62.50 %
6.	No need for local server maintenance	8	100 %

Table No. 8 shows that 7 (87.50 %),8 (100 %),6(75%),7 (87.50 %) 5 (62.50 %) 8 (100 %) respondents were stated 'Yes' for Cost-effectiveness, Remote access, Better uptime/availability , Automatic updates and backups , Scalability, No need for local server maintenance respectively. It is observed that Cost-

effectiveness, Remote access, No need for local server maintenance is most important benefits for using KOHA on Cloud.

Table 9

Sr. No.	What challenges do you face while using KOHA on Cloud?	No. of Respondent	Percentage
1.	Internet connectivity issues	4	50%
2.	Data security concerns	2	25%
3.	Lack of technical knowledge	3	37.50 %
4.	Dependence on service provider	6	75 %
5.	High annual maintenance cost	6	75%
6.	Delay in Support	2	25%

Table No. 9 shows that 4(50%), 2(25%) , 3(37.50%) , 6(75%) , 6(75%) , 2(25%) For Internet connectivity issues , Data security concerns , Lack of technical knowledge , Dependence on service provider , High annual maintenance cost , Delay in Support respectively. It is observed that for college libraries Dependence on service provider, High annual maintenance cost is most challenges facing issue for Implement KOHA on Cloud service.

Table 10

Sr. No.	Do you feel KOHA on Cloud has improved library service delivery?	No. of Respondent	Percentage
1.	Yes	8	100%
2.	No		00%

Table No. 10 shows that 100% College Libraries feel KOHA on Cloud has improved library service delivery. . It is observed that for college libraries Improved Users Services and Library Administration work from using KOHA on Cloud Services.

Table 11

Sr. No.	Do you think more training is required for library staff in cloud computing?	No. of Respondent	Percentage
1.	Yes	6	75%
2.	No	2	25%

Table No. 11 shows that 75% College Libraries needs more training required in Cloud Computing. 2(25%) College Libraries staff is trained and not required training. It is observed that most of the staff required More training for college libraries Improved Users Services and Library Administration work for using KOHA on Cloud Services.

Suggestions

1. Organize periodic training workshops in KOHA and cloud computing.
2. Set up technical support cells at the institutional level.
3. Work with vendors to get better service-level agreements (SLAs).
4. Improve the internet infrastructure so that the cloud can be accessed without any interruptions.
5. Support librarian networking so that they can exchange knowledge.

Conclusion

The implementation of KOHA on Cloud in Pravara Rural Education Society's non-technical college libraries showcases a successful integration of cloud computing in rural academic settings. Librarians appreciate the system's flexibility and accessibility, but challenges like vendor dependence and internet reliability must be addressed. The findings support the hypothesis that KOHA on Cloud has significantly improved library services,

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