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# Library automation to resource sharing: Prospects in Kerala state

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## Abstract

*Comprehensive library automation is a prerequisite for resource sharing initiatives like Interlibrary Loan and Document Delivery services in a cooperative environment. Shared library management system and a union catalogue enhance visibility to information resources available at networked libraries. Availability of IT infrastructure, skilled persons, the popularity of Koha and statewide mobile and Internet connectivity are favourable factors to build an ecosystem for resource sharing among academic libraries in Kerala state. A regional cooperative network for libraries ensures optimum utilisation of fund and maximum availability of resources. This article proposes a statewide ILL system for universities and colleges in Kerala state.*

## Keywords

Library cooperation, Interlibrary loan, Document delivery, Library automation, Open Source software, Discovery service.

## Introduction

Library and information support is highly necessary for the success of higher education, research and development activities in any society. Institutions in developing countries are not in a position to spend a massive amount for the procurement of information resources. In such a situation, library cooperation is the only solution to make available resources from other libraries to fill the gap. Initiatives for sharing resources among libraries is a need of the hour for the society.

Kerala state<sup>1</sup> owns good ICT infrastructure, especially in terms of mobile phone and broadband networks. Communication networks have reached in every nook and corner of the state. Kerala State has successfully implemented many ICT based initiatives in governance and education. Such initiatives could decrease the gap of the digital divide in the state (Ajay, 2001). A very favourable socio-economic situation exists in Kerala that is highly favourable to technology adoption in library cooperation. The State government has a sound IT policy<sup>2</sup>, and it also encourages the use of Free and Open Source software wherever possible (Babu, 2011). The Kerala state maintains its own data

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1 Kerala, the South Western coastal state of India. It is a small state, constituting only about 1% of the total area of the country. Kerala stretches for about 360 miles (580 km) along the Malabar Coast, varying in width from roughly 20 to 75 miles (30 to 120 km).

2 Kerala was the first state in India to adopt Free and Open Source Software as an instrument of State IT policy in 2001.

centres and agencies for the management of ICT based services in various sectors. Kerala state can utilize the IT infrastructure and network connectivity for the development of an Interlibrary loan system for library cooperation. This study is an attempt to look into the possibilities of developing an interlibrary loan system for college libraries under affiliating universities in Kerala state. This initiative can be achieved by utilizing social capital, ICT infrastructure, positive attitude to Open Source software, and the human capital for IT support at the Kerala state.

## Background information

Fourteen State universities are working in Kerala. University of Kerala, Mahatma Gandhi University, University of Calicut and Kannur University are four major affiliating universities in Kerala state. All of the Arts and Science colleges are affiliated to the above mentioned four universities. Each affiliating universities serve the higher education need of the public in various districts in Kerala. Arts and Science colleges are the popular centres for higher education in Kerala state. There are 219 Arts, and Science Colleges functioning in the Kerala State. Among them, 156 colleges are Government-Aided and 63 are Government colleges. Government and Government-Aided colleges offer Undergraduate, Postgraduate, MPhil and Doctoral programmes. Apart from these, various un-aided/self-financing Arts and Science colleges are also operating in the State with the affiliation of universities. As per the data of Kerala State Planning Board, 2.96 lakhs of students enrolled in various arts and science colleges (excluding unaided colleges) under the four affiliating universities in Kerala in the 2017-18 period. Of this 2.03 lakh (68.68%) are girls (State Planning Board, Kerala, 2018). The Department of Higher Education gives directions and controls the activities of higher education institutions in Kerala state. Affiliating universities and colleges are the prime focus of higher education in Kerala state. There are three categories of colleges in Kerala based on the ownership; Government, Government Aided and Self Financing Colleges. Government and Government Aided colleges have been receiving funds from University Grants Commission and Government of Kerala. About 255 Training, Law, and Arts and Sciences Government and Government-Aided colleges affiliated with the four affiliating universities. Jurisdiction of each affiliating universities in Kerala spread on several districts and hundreds of colleges. Each affiliating universities design the curriculum for the colleges. The affiliating universities and colleges follow the standards and directions for infrastructure, curriculum, evaluation, staff and library prescribed by the University Grants Commission (UGC).

The Government of India and the Government of Kerala have been providing fund for the procurement of resources and the development of infrastructure to the college libraries. Most of the affiliating universities and colleges in Kerala state depend on the E-ShodhSindhu consortium<sup>3</sup> for the access of e-resources. Kerala Government is also maintaining a fund for the procurement of purchasing books and e-resources. There is an imbalance in the collection of resources in university and college libraries in Kerala and no state-level cooperation among libraries to share the resources with other institutions (Raman Nair, 1990). The decentralized disbursement of funds, collection development activities and lack of cooperation among college libraries leads to duplication of resources and increase the expenditure on information resources. Buying the same resources at many institutions leads to spoiling of public money. Increasing information demand from the user community is another concern to university and college libraries in Kerala (Francis, 2005).

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3 E-ShodhSindhu is a consortium that provides access to e-resources to higher education institutions in India, including universities and colleges. An Initiative by the Ministry of Human Resources Development, Govt of India.

## Objectives of the study

Information networks at the national level are pioneers in the resource sharing activities in India. Such initiatives are fully funded and managed by the Government of India. National networks do not fulfil the requirements at the regional level. Regional networks can ensure optimum utilisation of financial resources and maximum availability of information resources in micro level (Francis, 1997). The main objective of the study is to check the feasibility of developing an interlibrary loan system for affiliating universities in Kerala state. The study went through the positive factors available in the Kerala state to build a state-wide resource sharing network and an Interlibrary Loan system. Following are the objectives of the study:

- ❖ Organise a survey to know the status of library automation at Government and Government-Aided colleges in affiliating universities in Kerala state.
- ❖ To check the possibilities of developing a union catalogue of college libraries for interlibrary loan.
- ❖ To prepare a detailed plan to utilise ICT infrastructure and logistics available at the Kerala state for the document delivery and Interlibrary Loan service.
- ❖ To seek the possibilities of building a software ecosystem based on Free and Open Source Softwares (FOSS) for the development of the resource sharing and Interlibrary Loan System.

## Literature review

Many national initiatives started to create a favourable situation for resource sharing activities in India. Document delivery through NISCAIR, DESIDOC, SENDOC, DELNET, and INFLIBNET initiatives have enabled the availability of documents at the national level (Rao, 2006).

INFLIBNET Centre started the document delivery and interlibrary loan service by making use of the platform J-gate Plus in 2008. INFLIBNET Centre has assigned ILL (Interlibrary Loan) Centres based on their unique journal titles. The ILL Centre receives requests from the users and sends back the desired documents. About 96% of document delivery requests have fulfilled the system during the period 2010-2016 (Panda & Mallappa, 2016).

The DELNET (Developing Library Network) is one of the milestones in the history of Indian library networks. The project started to interlink libraries and their resources in the Delhi region in 1988. DELNET maintain union catalogue of books, journals, journal articles, theses, and non-print materials for Interlibrary loan and document delivery services. DELNET has made a presence in almost all states in India and South Asian countries (Kaul, 2010).

Automation of libraries and networking is one of the necessary requirements for resource sharing activities. Specific popular library automation packages took a lead role to store the bibliographic details and computerize the library activities. CDS/ISIS was an excellent help for libraries for creating bibliographic databases. Many libraries could achieve uniformity in bibliographic storage by using CDS/ISIS (Anil, 2003).

Library networks can satisfy the information requirements of user community in micro level. Raman Nair proposed a design of a resource sharing network for Kerala state. The study envisions a resource sharing network which connects all higher education institutions in Kerala including universities and colleges. The study pointed out the necessity of a state wide network because 75% of the postgraduate students are from colleges and the quantum of resources are located in

university libraries. The model envisions a State Center for the resource sharing network with two divisions; one for coordinating the resource sharing activities in universities and other for colleges. University departments and colleges are the service points of resource sharing (Raman Nair, 1990).

Affiliating universities in Kerala could start the automation of library services in the 1990s. Majority of libraries could receive assistance from INFLIBNET to automate the housekeeping operations using SOUL software (Suku & Pillai, 2005).

The advent of the Koha Open Source Library Management System helped many college libraries to automate the housekeeping operations like cataloguing, circulation and report generation. Market share of Koha in Kerala is higher in any other states in India due to the availability of Open Source software support and the positive attitude of the state government to Open Source software (Kumar & Jasimudeen, 2012).

The ability to work a library management system in a shared environment is a need of the hour. Then the system can share data, use discovery and deliver services from a single platform. Security issues, scalability, performance, and integration with other library applications are the challenges with shared library management systems (Machovec, 2014).

Implementation of large-scale integrated library systems in a consortia environment is feasible. Sharing of automation software with built-in resource sharing functions is a growing trend, it lowers automation costs, increases resource sharing opportunities and opportunities for collaborative collection development. Libraries depend on consorcial borrowing, interlibrary loan and on-demand purchase for meeting urgent user needs. (Breeding, 2013).

## Methodology

The questionnaire method has been adopted to get an aerial view of the present status of library automation using Integrated Library Management system at the college libraries under four affiliating universities in Kerala. Law colleges, Training colleges, Arts and Science colleges under four affiliating universities selected for the study. Government and Government Aided colleges considered for the study. University of Kerala, Mahatma Gandhi University, University of Calicut and Kannur University selected for the study.

A semi-structured questionnaire was constructed to inquire about the metadata standard, nature and use of library software. The questionnaire was distributed among the professional library staff.

**Table 1**  
**Details of colleges participated in the study**

S. No.	Affiliating University	No. of questionnaires distributed among college libraries	No. of questionnaires received from college libraries	Percentage
1	University of Kerala	51	33	23%
2	Mahatma Gandhi University	68	55	38%
3	University of Calicut	68	46	32%

4	Kannur University	13	11	7%
<b>Total</b>		<b>200 (100%)</b>	<b>145 (72.5%)</b>	<b>100%</b>

Training, Law, Arts and Science colleges considered for the study because of the similar nature of information requirements in such colleges. Out of 255 colleges, 55 colleges are eliminated from the survey because of the chief librarian/in charge of libraries position was vacant. A total of 200 questionnaires distributed among the Arts and Sciences, training, and law colleges and 145 responses are received back. The response rate is 72.5%.

## Findings

The study inquires about whether or not the current library automation practices in colleges are suitable for the development of an ILL system. Type of library automation software used, use of functional modules and metadata format used were assessed. The results are as follows.

**Table 2**  
**Use of library management system in college libraries in Kerala**

Sl. No.	Description	Government (N = 27)	Government Aided (N = 118)	Total (N = 145)	p - value
1	<b>Koha</b>	11 (40.7%)	47 (39.8%)	58 (40.0%)	0.150
2	<b>LibSoft</b>	7 (25.9%)	18 (15.3%)	25 (17.2%)	
3	<b>Book Magic</b>	4 (14.8%)	15 (12.7%)	19 (13.1%)	
4	<b>SOUL</b>	0 (0.0%)	5 (4.2%)	5 (3.4%)	
5	<b>e-Granthalaya</b>	2 (7.4%)	1 (0.8%)	3 (2.1%)	
6	<b>LibSys</b>	0 (0.0%)	1 (0.8%)	1 (0.7%)	
7	<b>Others</b>	3 (11.1%)	31 (26.3%)	34 (23.4%)	

Koha (40.0%) is the popular library management software among both Governments (40.7%) and Government Aided college libraries in Kerala (39.8%). Other software (23.4%) and LibSoft (17.2%) are in second and third place. SOUL (3.4%), e-Granthalaya (2.1%), and LibSys (0.7%) have only a tiny share among college libraries in Kerala. Here the p-value ( $p > 0.05$ ) suggests that the use of integrated library management system is almost the same in both Government and Government Aided college libraries in Kerala.

## Areas of Library Automation

The table depicts the use of functional modules in library management systems among Government and Government-Aided college libraries in Kerala. Five functional modules of library software are listed out to know its use in day to day activities in college libraries under study.

**Table 3**  
**Use of functional modules in ILS used in college libraries in Kerala**

Sl. No.	Description	Government (N = 27)	Government Aided (N = 118)	Total (N = 145)
1	<b>Acquisition</b>	9 (33.3%)	56 (47.5%)	65 (44.8%)
2	<b>Cataloguing</b>	22 (81.5%)	114 (96.6%)	136 (93.8%)
3	<b>Circulation</b>	21 (77.8%)	113 (95.8%)	134 (92.4%)
4	<b>Serials Control</b>	5 (18.5%)	32 (27.1%)	37 (25.5%)
5	<b>OPAC</b>	22 (81.5%)	108 (91.5%)	130 (89.7%)

Majority of libraries use cataloguing (93.8%), circulation (92.4%), and online catalogue modules (89.7%) to automate the services. The table indicates that Government Aided college libraries are in a better position in the usage of all modules and automated services compared with Government college libraries. Acquisition (44.8%) and serial control (25.5%) modules are less used compared to other modules.

## Format of bibliographic description

The table indicates the format of bibliographic details in library management software among college libraries. Metadata in a standard format is ideal to share the bibliographic details in a cooperative library environment like a union catalogue. In addition, standardised metadata formats ensure easy migration from legacy library software to an innovative one in a shared software platform.

**Table 4**  
**Metadata standard of bibliographic details used in college libraries in Kerala**

Sl. No.	Description	Government (N = 27)	Government Aided (N = 118)	Total (N = 145)	p-value
1	<b>MARC</b>	15 (55.6%)	80 (67.8%)	95 (65.5%)	0.423

2	<b>CCF</b>	0 (0.0%)	2 (1.7%)	2 (1.4%)
3	<b>Others</b>	0 (0.0%)	4 (3.4%)	4 (2.8%)
4	<b>None</b>	4 (14.8%)	10 (8.5%)	14 (9.7%)
5	<b>Don't Know</b>	8 (29.6%)	22 (18.6%)	30 (20.7%)

A majority (65.5%) of library management software in Government (55.6%) and Government Aided (67.8%) colleges libraries follow MARC family of standards. A few college libraries use CCF format (1.4%). A small segment of library professionals (9.7%) aware that their library software does not follow any standards for metadata management. Another group of library professionals (20.7%) do not aware of the metadata standards available with the library automation system. Here the p-value ( $p > 0.05$ ) suggests that metadata standard of bibliographic details is almost the same in both Government and Government Aided college libraries in Kerala.

## Access to the online catalogue

Availability and access to online catalogue analysed and the reach of the services is also verified.

**Table 5**  
**Access to online library services in college libraries in Kerala**

Sl. No.	Description	Inside the library only	Inside campus only	Off-campus	Nil	p-value
1	<b>Online catalogue</b>	67 (46.2%)	35 (24.1%)	26 (17.9%)	17 (11.7%)	0.078

Only 17.9% of college libraries give access to the online catalogue to off-campus. Majority of the college libraries (46.2%) restrict the access of online catalogue inside the library only and 24.1% of college libraries provide access to online catalogue inside the campus. A group of libraries (11.7%) do not provide online catalogue service to users.

## Availability of interlibrary loan service at college libraries

Availability of Interlibrary Library Loan service in college libraries in Kerala are analysed.

**Table 6**  
**Availability of Interlibrary loan service**

Sl. No	Description	Government (N = 27)	Government Aided (N = 118)	Total (N = 145)
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1	<b>Yes</b>	0 (0%)	29 (24.6%)	29 (20%)
2	<b>No</b>	27 (100.0%)	89 (75.4%)	116 (80%)

The interlibrary loan service is not offered by the majority of college libraries (80.0%) in Kerala. Only 20% of college libraries provide interlibrary loan service to the academic community. The p-value ( $p < 0.05$ ) suggests that the unavailability of interlibrary loan is higher in Government college libraries (100.0%) compared to Government Aided (75.4%) college libraries.

## Discussion

Kerala state possesses the infrastructure required to build a resource sharing network for academic libraries. Decentralised library automation activities in Government and Government Aided Colleges in Kerala state shells out public money and creates duplication of efforts. A resource sharing network can offer seamless access to resources in libraries to the academic community.

Koha is the popular library management software among Government and Government Aided college libraries. The other libraries are using proprietary software for library automation. They are LibSoft , Book Magic , SOUL, e-Granthalaya, and LibSys. Koha users can be migrate the software and data to cloud platform. The users of other library software can move to the shared Koha platform with the assistance of experts. It will cut down the Total Cost Ownership of library automation software in academic institutions owned by Government of Kerala. Kerala State IT Mission provide hosting facilities for e-governance and education projects. Data centres of Kerala State IT Mission can be facilitated to host shared Koha platform for universities and colleges in Kerala.

Majority of Government and Government Aided college libraries have been following MARC (Machine Readable Cataloguing) for metadata description. A small group of libraries do not follow any of the industry standards for bibliographic description. Common platform and practices in library automation activities can be led to the development of a robust union catalogue with real time document availability in a cooperative network.

Interlibrary loan is not a popular service among college libraries, and only a small group of college libraries offer the service to the academic community. INFLIBNET and DELNET are the two significant players offer interlibrary loan service to Indian libraries. Availability of a regional level resource sharing network for interlibrary loan and document delivery could make available documents within a short period inside the state. It will also enhance the confidence of library professionals and the academic community.

Only 17.9% of libraries made available online catalogue on the Internet. Majority of the college libraries restrict the access to online catalogue inside the library. It points out the lack of ICT infrastructure and connectivity at colleges to maintain library management systems. It also affects the access to online catalogue through the Internet by library users.

Its high time to create a state wide network for resource sharing among academic libraries in Kerala. The Government of Kerala able to build a resource sharing network by using the existing IT infrastructure available in the state. Need coordination among authorities and academic institutions to create consensus and initiate the networking activities for libraries.

# Proposed ILL system for Kerala state

The proposed ILL system for the Kerala state covers the four affiliating universities system. University and college libraries are part of the ILL system. In the first phase of the project, university libraries, libraries of Government Law, Training, Arts and Science colleges become the members of the ILL system. Libraries of Government Aided colleges can participate in the network in the second phase of the project.

The Department of Higher Education, the Kerala State Higher Education Council, affiliating universities in Kerala, the Department of Collegiate Education, and the Kerala State IT Mission are the partners of the proposed ILL system.

The leader of the state-level ILL system should be a "Director" with experience in the Library and Resources sharing network. For the efficient operation of the network activities, nodal centres to be established. Central libraries of the universities in the state can act as nodal centres of the ILL system. "Nodal Centres" can coordinate the activities at the regional level. The selection of the nodal centres based on the availability of experts and training facilities.

The ILL system utilise the existing resources available at Kerala state, including ICT infrastructure, logistics, and human resources:

**ICT infrastructure:** Hosting of software for the ILL system should be at Cloud infrastructure at Data Centre owned by Kerala State IT Mission. Koha is the popular library management software among college libraries in Kerala. Koha integrated library management system is an ideal candidate for the ILL environment because it fulfils all industry standards. Hosting of library automation software at all colleges to Koha software hosted at State Data Centre is the first phase of the project. The network system should offer assistance to college libraries to migrate from software other than Koha.

A portal with search facility and document request from users need to act as the front end of the project. A discovery service should be back end of the portal. The discovery service will search through all member libraries metadata and find record details for the users. Open Source discovery services like VuFind can select for the project to acts as a portal and discovery service. As it is an Open Source software, VuFind can customise to fit the requirements of the project.

**Logistics for ILL:** Kerala is a small state with minuscule geography compare with other states in India. The network of the public transport system, India Post and private courier services are reachable to every nuke and corner of Kerala state. The ILL system can make use of Kerala State Road Transport Corporation (KSRTC) for the rapid movement of documents throughout the state. The establishment of an efficient delivery system is possible for the ILL system in Kerala. It can facilitate an agile channel for fast document delivery using either physical or online channels.

**Human resources:** The proposed ILL system should deploy administrative, scientific and technical staff for the implementation and ongoing works. The scientific and technical staff should be from the domain of Library Science and Computer Science. The project can find and appoint ideal candidates for various posts through direct recruitment/ on deputation basis.

Implementation of the network should start with agreeing on Memorandum of Understanding among the partners of the ILL and member libraries. Activities of the ILL system can be initiated

with the appointment of the right workforce to the network team. Phase-wise implementation will be convenient to achieve the objectives of the project.

## Expected benefits of the ILL system

This proposed resources ILL system for the Kerala state will be beneficial to the academic community of Kerala in the following ways:

- ❖ The ILL system facilitates a single window for interlibrary loan and document delivery among university and college libraries.
- ❖ The ILL system can give confidence among member libraries and lead to the development of new avenues for collaboration.
- ❖ Libraries can concentrate on developing the core collection of information resources. Interlibrary loan system can help the libraries to arrange documents for temporary use.
- ❖ Libraries can enjoy Koha ILS from the cloud platform, and library professionals become free from maintaining hardware and software at libraries.
- ❖ Search, find and make available the documents reside at various libraries in Kerala state without much delay.
- ❖ Union catalogue and discovery service along with ILL system can enable copy cataloguing, user rating of documents, sharing of document details, email and SMS alerts will be the highlights of the ILL portal with web 2.0 features.
- ❖ The proposed ILL system will expose the library collection to the entire academic community in Kerala state and ensure maximum utilisation of resources.

## Conclusion

Resource sharing initiatives like Interlibrary Loan and document delivery services helps the libraries to maximise the availability of resources and optimum utilisation of public money. The ILL system can enhance the confidence level among the library professionals and the academic community by pooling information resources scattered in various libraries in the state. Kerala state blessed with all infrastructure required to build and manage a library network for library cooperation and resource sharing. The authority of higher education institutions, academic community and library professionals should receive the proper awareness about the benefits of the network. In this manner, the Government of Kerala can spend the public fund on information resources in a meaningful way through networking of libraries in the state.

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