RESEARCH PAPER

Library Automation and Networking Status among Polytechnic and Engineering College Libraries in Chandrapur District, Maharashtra

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Abstract: **The present study aims to assess utilization of automation and networking by the Librarian, students and faculty members of polytechnic and engineering colleges in Chandrapur district, Maharashtra. Researcher administered a structured questionnaire to librarians, students and faculty members as participants in this study. This study assessed and explained various aspects like automated services, automated status, software used, computerized are in library, fund source for library automation, types of networks used, satisfaction level regarding digital library services. It was observed that automation and networking is essential for learning, teaching and research for students and faculty members. It was concluded from the study that majority of the polytechnic and engineering college libraries in Chandrapur district, Maharashtra are automated with proper networking.**

Keywords: ***automation, networking, digital library, polytechnic and engineering colleges***

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I. Introduction

Application of technology and specialized software system to perform various library activities is referred as library automation. It focuses on developing mechanism and software that handle routine library functions efficiently to reduce dependance on manual work. The library automation is nothing but it is 'Integrated Library Systems' which helps in various routine library functions like cataloguing and classification, circulation, inventory management, acquisition, reporting and analytics with the help of integrated library software. Library automation is comprised of in-house functioning of the library and applications of information technology in libraries including information search and retrieval.

A. Networking

A computer network refers to a system of interconnected devices that communicate and exchange resources and information. According to the English Language Encyclopedic Unabridged Dictionary of Webster, these devices include computers, printers, servers, and other hardware that help in smooth transfer of data. A linkage of different types of computers and other devices like printers and CDs, so that tools and information can be exchanged efficiently is a network according to Oxford Advanced Learner's Current English Dictionary.' (Hornby, 1968). Computer network includes electrical cable, optical fibres, radio waves, or infrared light signals. Typically, Networks are of three types: LAN (Local Area Network), WAN (Wide Area Network) and MAN (Metropolitan Area Network). Global awareness of networked infrastructure is increasing now-a-days. Many academic institutions are being equipped with networked infrastructure to use and access remote and local library resources. (Rao & Choudhury, 2010). Swift development of Information Technology has made available totally new platform for users with improved information services and resources particularly Internet and related technologies.

II. Review of Literature

Saibaba[1] examined co-operating and networking among engineering and technological libraries in India. An author found that primary benefit of co-operating and networking among libraries is cost and time efficiency particularly useful in rising prices and reduced funding.

Establishment of a library network and automation in libraries in engineering college in Tamil Nadu for optimum use of resources for the benefit of the faculties, research scholars and students and to enhance the quality of education was proposed by Sivaraj[2].

Pagore[3] studied status of library automation in Marathwada Shikshan Prasarak Mandal, Aurangabad college libraries of Maharashtra state. The study evaluated library automation and services in M. S. P. mandal college libraries. Conclusion of the study was 57% college libraries of M. S. P. Mandal were equipped with automation facilities. Some colleges were facing problems of inadequate fund, indifferent attitude in towards improving IT skills and knowledge. Certain colleges were experienced difficulties in power problems.

Vasishta[4] discussed the condition of library automation and networked services in libraries of six technological deemed university located in North India. The data was gathered through questionnaire method. The results revealed that Libsys is being used by 83.33% libraries, SOUL by only one library and none of the libraries have developed their own in-house automation software. Computerization of cataloguing was the priority in 83.33% colleges. OPAC enables quick online access to the entire library collection through computer terminals. About two-third of the libraries offer internet browsing facilities within their premises.

Consortia efforts in India like INDEST-AICTE consortium, UGC-INFONET, e-Shodh Sindhu, JCCC consortium, CeRA consortium was highlighted in study carried out by Gulati[5]. The study discussed digitation efforts at ICAR, NISCAIR, Kerala DAC prune and digital libraries of

India. It also incorporates library networks in India like DELNET, INFLIBNET and CALIBNET.

Das and Chatterjee[6] carried out the study on Library Automation: An overview. Authors observed that the implementation of automation in libraries have removed the difficulties associated with manual operations. Library operations before automation required a great deal of time to complete and had a higher chance of repetition of work. Biggest problem after library automation is the network problem.

Study of issues faced by college libraries in eastern Uttar Pradesh before and after automation was carried out by Shakuntla Singh[7]. Study concluded that unawareness of user, lack of resources required are the hurdles in automation work. Empowering library staff, training for user awareness are the suggestions given by authors.

Mamoriya and Singh[8] studied status of university library automation, problems and their prospects of library automation. The study area was university libraries in Bhopal. The study found that most of the university libraries were fully automated.

The current status of library automation and challenges encountered during its implementation in special libraries was examined by Rajput and Gautam[9]. The study area was Indore city, Madhya Pradesh. An organized questionnaire was utilized as a tool for this study. The study discussed automation, its necessity and uses in special libraries. The conclusion of the study was that many problems were encountered by authorities and clerical staff during the automation process. The staff unwillingness and lack of positive attitude towards automation and library software are the major difficulties to speed up automation work.

A survey on automation in college libraries in Goa, India was conducted by Bansode and Periera[10]. The study revealed that only 25% of colleges had appointed qualified librarians in accordance with UGC and the state Government guidelines. Most of the college libraries started use of automation in their various library activities. Majority of the college libraries are facing lack of the trained staff necessary for automation.

Use of radio frequency identification (RFID) technology and its problems in academic libraries was carried out by Nagalakshmi[11]. RFID technology is used in libraries to different activities like self-service check out/check in, theft detection, efficient shelving, automated material handling, stock verification etc. Mulla and others3 observed that 13.73 percent engineering college libraries in Karnataka are not automated. Financial constraints, lack of qualified and trained man power, lack of infrastructure and less amount of library collection could be the reasons.

A study examining the status of library automation and networking in engineering college libraries within The Sri Venkateswara University region was performed by T. R. Reddy[12]. An author found that library automation and networking is most effective and user-friendly technology for accessing library resources in all fields in all engineering colleges.

III. Need for the Study

Now- a-days, automation and networking has become an essential part in polytechnic and engineering college libraries for modernizing operations and enhancing user services. Automation and networking have covered almost all the areas along-with libraries. Libraries and information centres are playing a crucial role in delivering accurate information to the right users at the right time in an appropriate manner. The adaptation of automation and networking in libraries is beneficial for both library professionals and library users. It also contributes to reputation of college/institution. A significant amount is being used by polytechnic and engineering colleges on installing automation and networking. Hence it is essential to develop awareness and use of automation and network by library user, to provide skill-based training to library authorities and staff. This will help in providing better services in libraries. Taking into consideration the need of time, the researcher has executed the present study.

IV. Objectives of the Study

i. To evaluate the level of automation and networking in polytechnic and engineering college libraries in Chandrapur district.
ii. To identify challenges and problems faced by polytechnic and engineering college libraries in Chandrapur district.
iii. To evaluate the impact on library services.
iv. To find various areas in automation.
v. To find the category of software used.
vi. To assess various ICT services available in college libraries.
vii. To find out user satisfaction.

V. Hypothesis

i. Most of the polytechnic and engineering college libraries have digital library facilities.
ii. Majority of the polytechnic and engineering college libraries have Local Area Network (LAN).
iii. Most of the libraries of polytechnic and engineering colleges are using commercial software for their digital libraries.
iv. Most of the polytechnic and engineering college libraries are members of DELNET.

VI. Methodology of the Study

There are 12 polytechnic and 5 engineering colleges in Chandrapur district in Maharashtra. A survey method is used by means of well-structured questionnaire was framed based on the stated objectives. Questionnaire was mailed to librarians, library staff and faculties of all polytechnic and engineering colleges in Chandrapur district, Maharashtra to collect data on different aspects of library automation, its present status and networking, software used in automation, challenges faced etc. Total 20 responses of Officials/faculty members from 9 polytechnic and 4 engineering colleges are given. The user of polytechnic and engineering college libraries are faculty members, diploma and undergraduate students.

The study is restricted to polytechnic and engineering colleges situated in Chandrapur district, Maharashtra.

VII. Data Analysis and Discussion of the Results

57.1% librarians, 7.2% library staff and 35.7% faculty members from various polytechnic and engineering colleges are responded to questionnaire. Role of respondent to questionnaire is displayed in Table 1.

TABLE I
ROLE OF RESPONDENTS

Category of respondent	Percentage
Librarians	57.1%
Library staff	7.2%
Faculty members	35.7%
Total	100%

To determine the awareness of librarians, staff and faculty members regarding library automation networks like INFLIBNET, DELNET, SOUL, KOHA or others, a question was posed to them. Their responses are summarized in Table 2.

TABLE II
AWARENESS REGARDING LIBRARY AUTOMATION NETWORKS

Institution type	Awareness regarding library automation networks			Total
	Yes	No	Partially	
Polytechnic	7(77.77%)	0(0.0)	2(22.23%)	9(100%)
Engineering	4(100%)	0(0.0)	0(0.0)	4(100%)

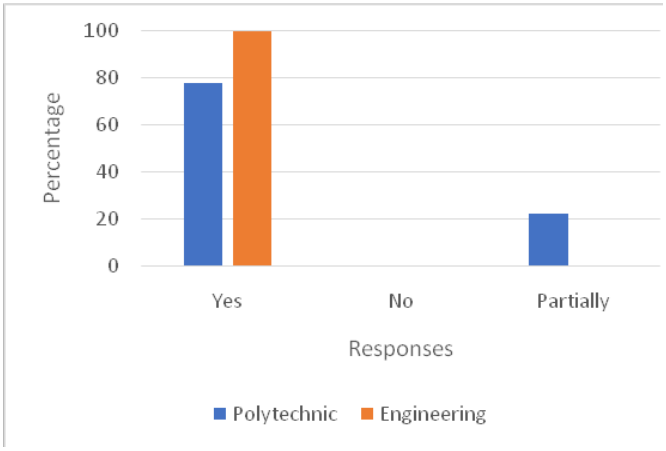

Fig. 1 Awareness regarding library automation networks among polytechnic and engineering colleges

A question was asked to the librarians, staff and faculties to assess the status of their libraries i.e. fully automated, partially automated or at the initial stage. The responses received are presented in Table 3.

TABLE III
STATUS OF LIBRARY AUTOMATION

Institution type	Fully automated	Partially automated	At the initial stage
Polytechnic	0(0.0)	7(77.77%)	2(22.23%)
Engineering	0(0.0)	4(100%)	0(0.0)

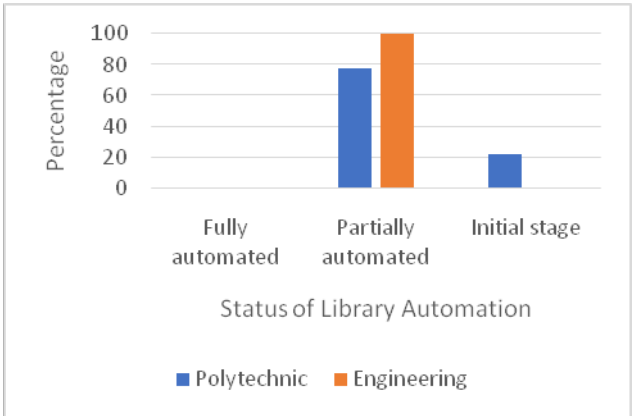

Fig. 2 Status of library automation in polytechnic and engineering colleges

A question was asked to the librarians, staff and faculty members to find out whether their libraries use an automation software. The responses received are presented in Table 4.

TABLE IV
AUTOMATION SOFTWARE

Institution type	Automation software			Total
	Yes	No	Partially implemented	
Polytechnic	6(66.66%)	3(33.34%)	0(0.0)	9(100.00%)
Engineering	4(100.00%)	0(0.0)	0(0.0)	4(100.00%)

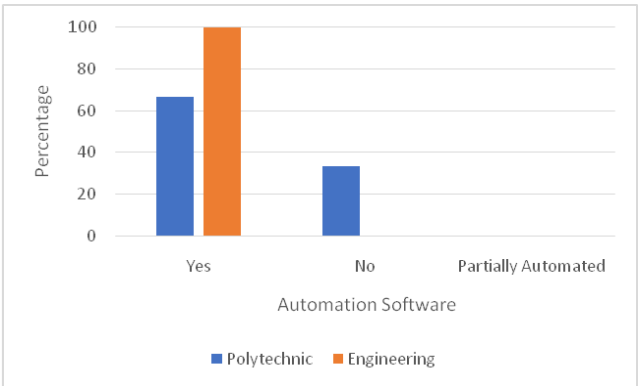

Fig. 3 Availability of library automation software in polytechnic and engineering colleges

Responses to a question to the librarians, staff and faculties that which library automation software/network is available in your institution? are given in Table 5.

TABLE V
LIBRARY AUTOMATION SOFTWARE

Institution type	Software used
Polytechnic	Lib-Man Glibrary LibSys SARAL
Engineering	Lib-Man

	Auto-Lib e-Granthalaya

Responses to a question to the librarians, staff and faculties that which services are automated in your library? are given in Table 6.

TABLE VI
SERVICES WHICH ARE AUTOMATED IN LIBRARY

Institution type	Services which are automated in Library		
	Online Catalogue	Book issue/return (Circulation)	e-resources access (Journals)
Polytechnic	6(66.66%)	4(44.44%)	2(22.22%)
Engineering	4(100.00%)	4(100.00%)	4(100.00%)

Interlibrary loan resources	User registration and id cards	Stock verification
Nil	3(33.33%)	2(22.22%)
Nil	3(75.00%)	2(50.00%)

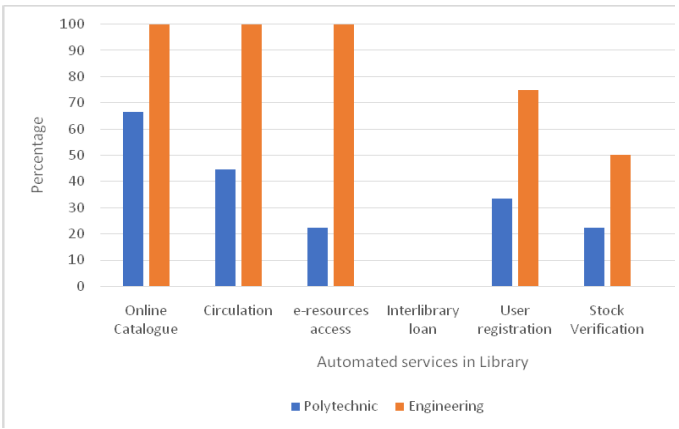

Fig. 4 Automated services available in polytechnic and engineering college libraries

Librarians, staff and faculty members were surveyed about how often users access automated library services, and the results are shown in Table 7.

TABLE VII
FREQUENCY TO ACCESS AUTOMATED LIBRARY SERVICES

Institution type	Frequency to access automated library services				Total
	Regularly	Sometimes	Rarely	Never	
Polytechnic	3(33.33%)	5(55.56%)	0(0.0)	(11.11%)	9(100.00%)
Engineering	2(50.00%)	2(50.00%)	0(0.0)	0(0.0)	4(100.00%)

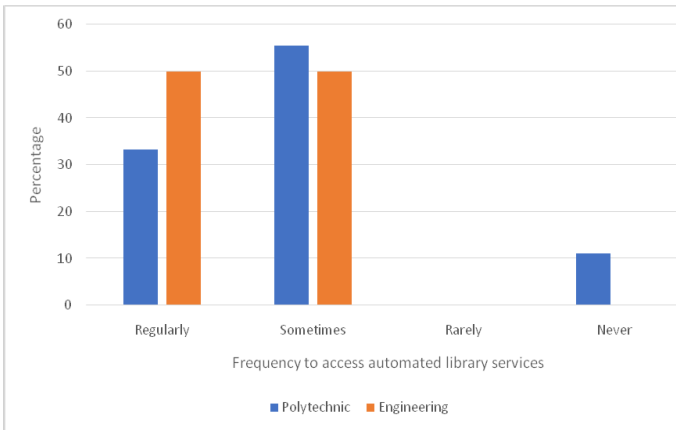

Fig. 5 Frequency of access to automated library services in polytechnic and engineering colleges

Do students and faculties find library automation helpful in their academic work? Responses to this question by librarians, library staff and faculty members are given Table 8.

TABLE VIII
HELPFULNESS OF AUTOMATED LIBRARY TO STUDENTS AND FACULTY MEMBERS

Institution type	Helpfulness of automated library to students and faculty members				Total
	Very helpful	Helpful	Neutral	Not helpful	
Polytechnic	4(44.44%)	3(33.33%)	2(22.22%)	0(0.0)	9(100.00%)
Engineering	3(75.00%)	1(25.00%)	0(0.0)	0(0.0)	4(100.00%)

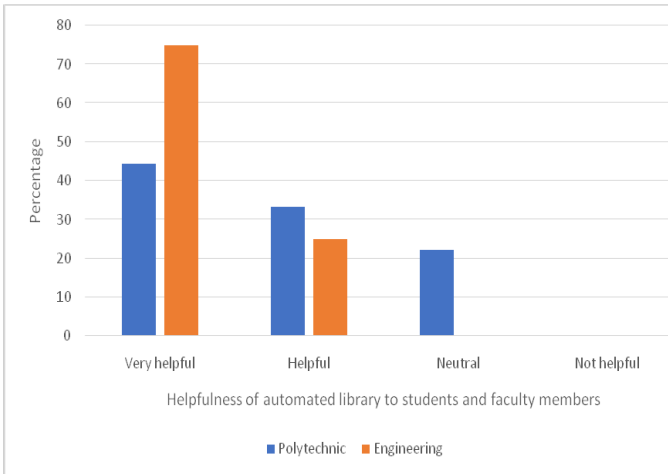

Fig. 6 Helpfulness of automated library services to students and facility members in polytechnic and engineering colleges

What is the category of software used in your library? Responses to this question by librarians, library staff and faculty members are given Table 9.

TABLE IX
CATEGORY OF SOFTWARE

Institution type	Category of software used			Total
	Open source	Commercial	Own developed	
Polytechnic	1(11.11%)	8(88.89%)	0(0.0)	9(100.00%)
Engineering	0(0.0)	4(100.00%)	0(0.0)	4(100.00%)

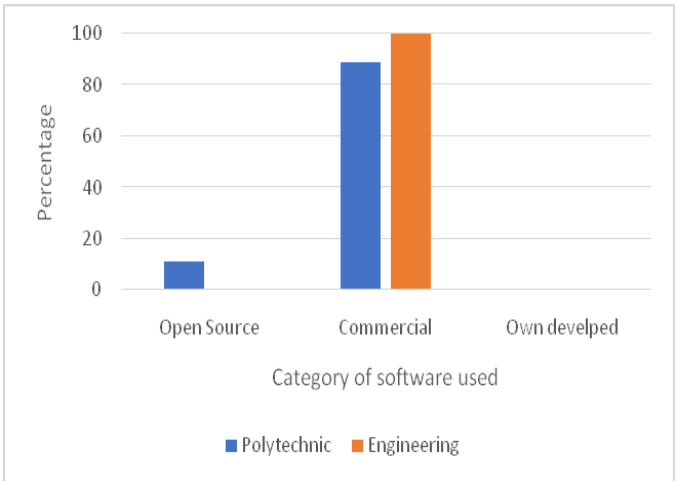

Fig. 7 Category of library automation software used in polytechnic and engineering colleges

To determine the source of finance for library automation, librarians, staff and faculty members were asked a question. Their responses are summarized in Table 10.

TABLE X
SOURCE OF FINANCE FOR LIBRARY AUTOMATION WORK

Institution type	Source of finance for library automation work				Total
	Donor funding	Management funding	Government funding	Other sources	
Polytechnic	0(0.0)	8(88.88%)	1(11.11%)	0(0.0)	9(100.00%)
Engineering	0(0.0)	4(100.00%)	0(0.0)	0(0.0)	4(100.00%)

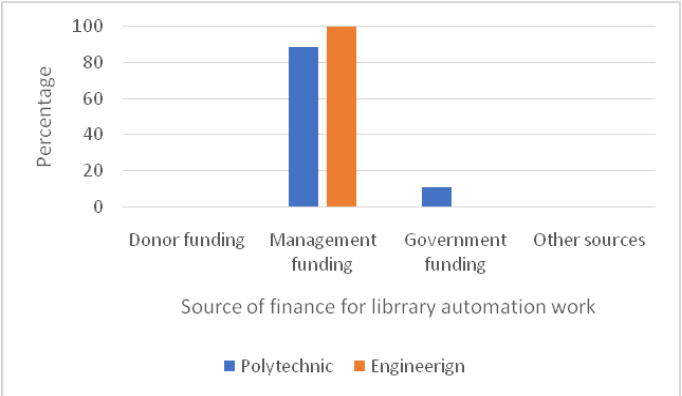

Fig. 8 Source of finance for library automation work in polytechnic and engineering colleges

Responses of librarians, library staff and faculty members are given in Table 11 regarding the question is your library computerized?

TABLE XI
LIBRARY COMPUTERIZATION

Institution type	Library computerization		Total
	Yes	No	
Polytechnic	9(100%)	0(0.0)	9(100%)
Engineering	4(100%)	0(0.0)	4(100%)

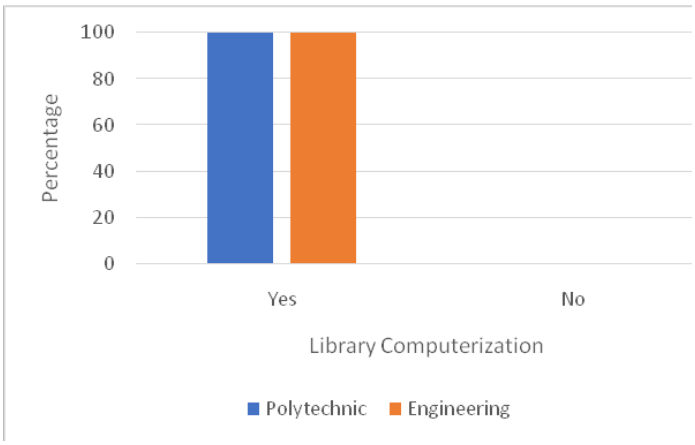

Fig. 9 Status of library computerization in polytechnic and engineering colleges

Responses of librarians, library staff and faculty members are given in Table 12 regarding the question is your library digitalized?

TABLE XII
LIBRARY DIGITALIZATION

Institution type	Library digitalization		Total
	Yes	No	
Polytechnic	5(55.56%)	4(44.44%)	9(100.00%
Engineering	4(100.00%)	0(0.0)	4(100.00%)

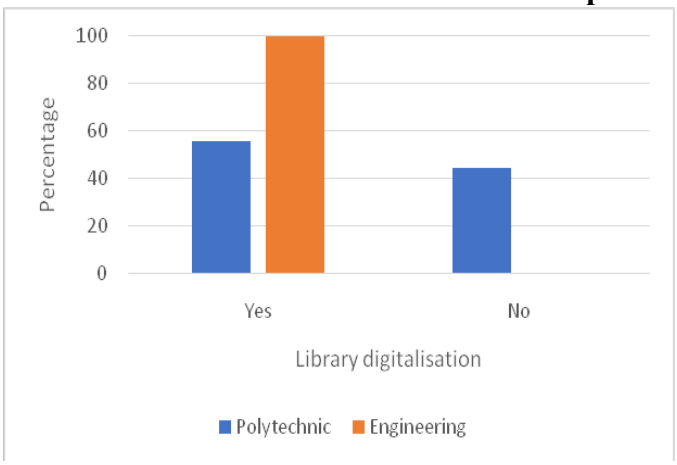

Fig. 10 Status of library digitalization in polytechnic and engineering colleges

A question was asked to the librarians, staff and faculties to know what type of network they are using in their library? Responses given by them are shown in Table 13.

TABLE XIII
TYPE OF NETWORK USED IN LIBRARY

Institution type	Type of network used in library			Total
	LAN	WAN	MAN	
Polytechnic	8(88.88%)	1(11.11%)	0(0.0)	9(100.00%)
Engineering	4(100.00%)	0(0.0)	0(0.0)	4(100.00%)

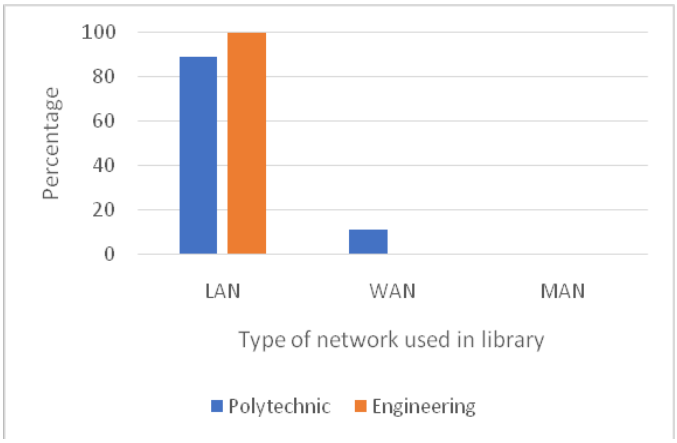

Fig. 11 Type of network used in libraries of polytechnic and engineering colleges

A question was asked to the librarians, staff and faculties to understand what challenges did you face in implementing library automation network? Their responses are presented in Table 14.

TABLE XIV
CHALLENGES FACED IN IMPLEMENTING AUTOMATION NETWORK

Institution type	Challenges faced in implementing automation network		
	Lack of fund	Lack of skilled staff	Inadequate infrastructure [Internet, server etc]
Polytechnic	4(44.44%)	7(77.77%)	3(33.33%)
Engineering	1(25.00%)	2(50.00%)	0(0.0)

Resistance to change among staff/user	Software/ Technical issues	Others
2(22.22%)	4(44.44%)	2(22.22%)
1(25.00%)	1(25.00%)	2(50.00%)

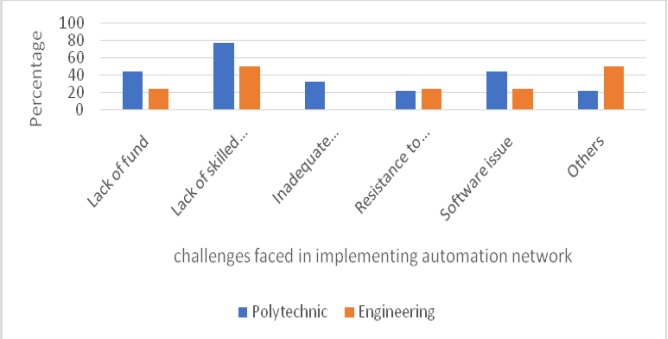

Fig. 12 Challenges faced in implementing automation network in polytechnic and engineering colleges

A question was asked to the librarians, staff and faculties to find out the biggest barriers in using automated library services. Their responses are presented in Table 15.

TABLE XV
BIGGEST BARRIERS IN USING AUTOMATED LIBRARY SERVICES

Institution type	Biggest barriers in using automated library services		
	Lack of awareness/ training	Limited access to computers/internet	Complicated software interface
Polytechnic	5(55.55%)	3(33.33%)	1(11.11%)
Engineering	1(25.00%)	1(25.00%)	0(0.0)

Preference for manual system	Other
1(11.11%)	2(22.22%)
0(0.0)	0(0.0)

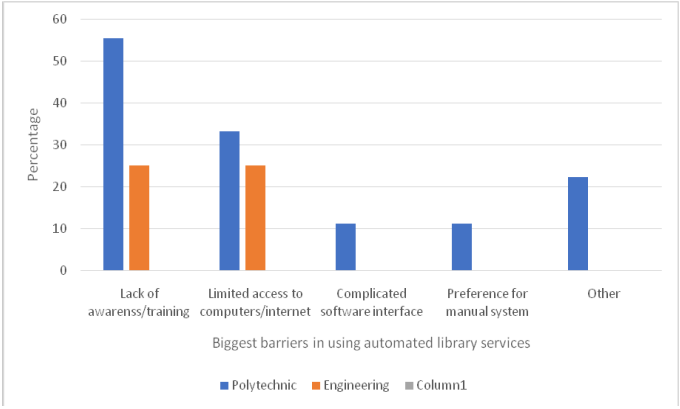

Fig. 13 Biggest barriers in using automated library services in polytechnic and engineering colleges

A question was asked to the librarians, staff and faculties to get information regarding steps to improve the effectiveness of library automation. Their responses are presented in Table 16.

TABLE XVI
STEPS TO IMPROVE THE EFFECTIVENESS OF LIBRARY AUTOMATION

Institution type	Steps to improve the effectiveness of library automation					
	Training for staff and users	More budget allocation for library automation	Upgrading software/hardware	Stronger internet and networking facilities	Collaboration with other libraries (Resource sharing)	Others
Polytechnic	5(55.55%)	3(33.33%)	1(11.11%)	0(0.0)	0(0.0)	0(0.0)
Engineering	2(50.00%)	1(25.00%)	1(25.00%)	0(0.0)	1(25.00%)	0(0.0)

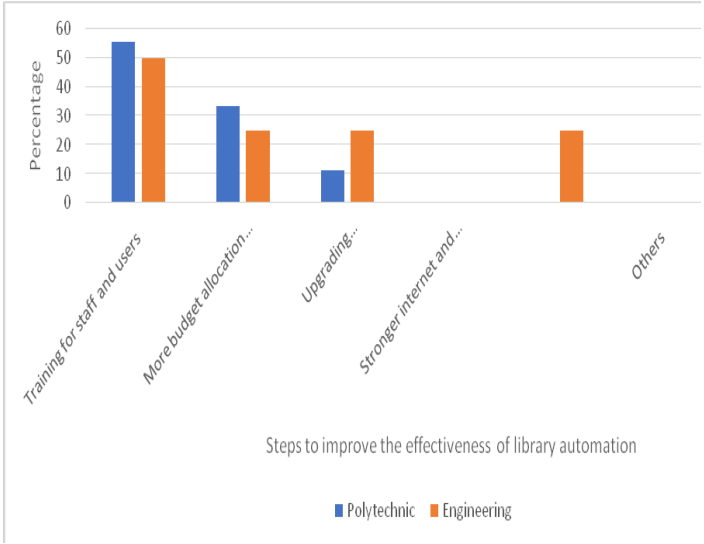

Fig. 14 Steps to improve the effectiveness of library automation in polytechnic and engineering colleges

Responses of librarians, library staff and faculty members are given in Table 17 regarding the question do you think library automation network increase the visibility and accessibility of resources?

TABLE XVII
RESPONSES TO INCREASE IN THE VISIBILITY AND ACCESSIBILITY OF RESOURCES DUE TO LIBRARY AUTOMATION NETWORK

Institution type	Responses to increase in the visibility and accessibility of resources due to library automation network				Total
	Strongly agree	Agree	Neutral	Disagree	
Polytechnic	3(33.33%)	2(22.22%)	4(44.44%)	0(0.0)	9(100.00%)
Engineering	4(100.00%)	0(0.0)	0(0.0)	0(0.0)	4(100.00%)

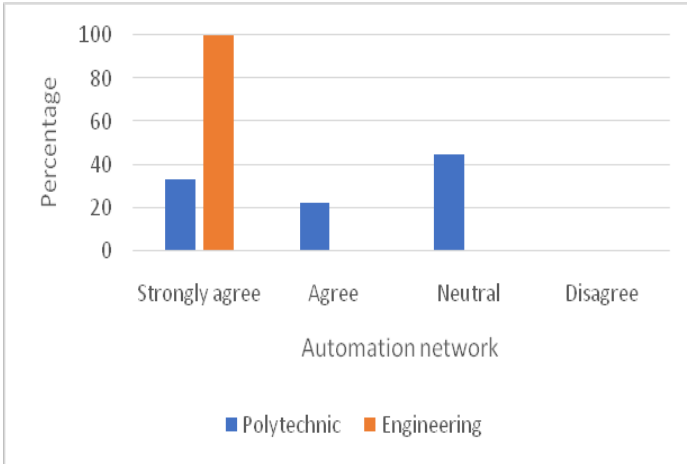

Fig. 15 Responses on increase in visibility and accessibility of library resources due to library automation network

Responses of librarians, library staff and faculty members are given in Table 18 regarding the question would you recommend making library automation compulsory for all engineering and polytechnic colleges?

TABLE XVIII
RESPONSES TO MAKE LIBRARY AUTOMATION COMPULSORY FOR ALL ENGINEERING AND POLYTECHNIC COLLEGES

Institution type	Responses to make library automation compulsory for all engineering and polytechnic colleges			Total
	Yes	No	Not sure	
Polytechnic	9(100.00%)	0(0.0)	0(0.0)	9(100.00%)
Engineering	4(100.00%)	0(0.0)	0(0.0)	4(100.00%)

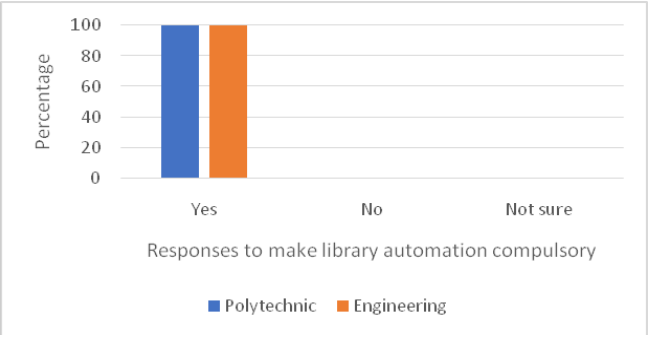

Fig. 16 Responses on making library automation compulsory for all engineering and polytechnic colleges

VIII. FINDINGS OF THE STUDY

i. Most of the polytechnic (77.77%) and engineering college (100%) respondents in Chandrapur district, Maharashtra are aware of library automation networks like DELNET, INFLIBNET, KOHA.

Awareness of library automation networks is higher is engineering colleges than in polytechnic colleges.

ii. Most of the polytechnic (77.77%) and engineering college (100%) libraries in Chandrapur district, Maharashtra are partially automated.

Engineering colleges show greater progress will all libraries being partially automated while small number of polytechnic colleges are still in initial state in library automation.

iii. Most of the polytechnic (66.66%) and engineering college (100%) libraries in Chandrapur district, Maharashtra have automation software implemented.

All engineering colleges have adopted automation software showing full implementation. However, only two-third of polytechnic colleges have adopted automation software and one-third still lack it.

iv. Polytechnic college libraries in Chandrapur district, Maharashtra use variety of automation software like Lib-Man, Glibrary, SARAL, LibSys while engineering college libraries use Lib-Man, Auto-Lib, e-Granthalaya automated software.

This shows that there is no uniformity in software used in polytechnic as well as engineering college libraries.

v. Polytechnic college in Chandrapur district, Maharashtra show partial progress with automation ranging from 23% to 66% in various fields like online cataloguing, book issue and return, e-resources access etc.

Engineering college libraires show 100% automation across all major library services like catalogue, book issue and return, e-resources, stock verification etc.

vi. Majority of polytechnic student access automated library services only sometimes while 50.00% engineering students access automated library services regularly in Chandrapur district, Maharashtra.

Engineering students exhibit higher and more consistent usage of automated library services as compared to polytechnic college students.

vii. Most of the polytechnic (50.00%) and engineering college (75.00%) students found automated library very helpful.

Both polytechnic and engineering college students perceive automation as beneficial, but degree of helpfulness is higher in engineering college students.

viii. Most of the polytechnic (88.89%) and engineering college (100%) libraries in Chandrapur district, Maharashtra use commercial software for library automation.

Commercial software is the dominant choice for library automation in both polytechnic and engineering colleges. No institution has developed its own software for library automation.

ix. Majority (88.88%) of polytechnic and all (100%) of the engineering college libraries in Chandrapur district, Maharashtra rely entirely on management funding for library automation.

Management funding is the main and dominant source of finance for library automation in both polytechnic and engineering colleges.

x. All polytechnic (100%) and engineering college (100%) in Chandrapur district, Maharashtra reported that their libraries are computerized.

This study clearly indicates that all surveyed colleges both polytechnic and engineering have achieved complete computerization of their libraries.

i. 55.55% polytechnic and 100% engineering college libraries in Chandrapur district, Maharashtra reported that their libraries are digitalized.

The study shows that engineering college libraries have achieved full digitalization while polytechnic libraries are partially digitalized.

xii. Majority of polytechnic (88.88%) and all engineering college (100%) libraries in Chandrapur district, Maharashtra use Local Area Network (LAN). A small proportion of polytechnic college libraries use a Wide Area Network (WAN).

The study indicates that Local Area Network (LAN) is the most commonly used network type in both polytechnic and engineering libraries.

xiii. Most important barrier in using automated library services across both polytechnic and engineering colleges in Chandrapur district, Maharashtra is the lack of skilled staff. Lack of funds and technical/software issues are also major hindrances.

The study indicates that though both polytechnic and engineering college libraries recognized the value of automation, their progress is slow mainly due to insufficient training, limited financial sources and technical challenges.

xiv. Most of the polytechnic (55.55%) and engineering college (50.00%) respondents in Chandrapur district, Maharashtra have emphasized that the need for training programs for library staff and users to enhance automation skills.

The study shows that across both types of colleges, most frequently suggested step is training of staff and users.

xv. 33.33% of polytechnic and a complete 100% engineering college respondents in Chandrapur district, Maharashtra strongly agree that library automation networks have significantly improved the visibility and accessibility of resources.

The study indicates that engineering colleges are full confident about positive impact of automation while polytechnic colleges display a more mixed response probably due to implementation or technical issues.

xvi. All 100% respondents of polytechnic and engineering colleges in Chandrapur district, Maharashtra are agreed that library automation should be made compulsory.

The study demonstrates strong awareness and positive attitude among librarians, staff and faculty members towards adopting and standardizing automated systems in academic libraries.

IX. Suggestions

The following suggestions are given by the users and faculty members to improve the use of the automation and networking in polytechnic and engineering colleges in Chandrapur district, Maharashtra.

i. Polytechnic colleges should organize awareness workshop regularly to make remaining library professionals fully aware of automation network.

ii. Since no polytechnic or engineering college has fully automated library, suggestion is that all polytechnic and engineering colleges should take strategic initiatives to achieve complete automation to give better services to users.

iii. 33.34% of polytechnic libraries are still not automated. These libraries should be provided with financial support, technical guidance to start automation process.

iv. Since polytechnic college libraries show partial automation ranging from 23% to 66%, it is strongly needed to extend automation to all services in all polytechnic colleges.

v. Since only 11.11% of polytechnic libraries are using open-source software, these colleges should be encouraged to adopt open source software like Koha, or evergreen to reduce cost.

vi. Only 33.33% polytechnic and 50% engineering college users access automated library services regularly. It is suggested that libraries should create awareness campaign for users.

vii. Only 55.55% of polytechnic college libraries have achieved digitalization. Hence, polytechnic colleges should be supported and encouraged to adopt fully digital library systems.

X. Conclusions

It has been observed that Library automation and networking is now-a-days most efficient and user friendly technology to access the library resources in all the fields. All engineering colleges in Chandrapur district, Maharashtra are highly efficient in automation and networking which helps to access information and exchange ideas of students and faculties in various disciplines. Many polytechnic and engineering students and faculty members are using electronic journals and e-databases widely during their education/profession. It is important to provide free automation and networking services with increased accession numbers of subscribed e-journals and e-databases like e-books or magazines to fulfil emerging needs of polytechnic and engineering students and faculty members. It is mandatory for polytechnic colleges in Chandrapur district, Maharashtra to provide automation and networking services to enhance quality of education.

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