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A Study of Availability of Information Infrastructure in Engineering College Libraries of Chhattisgarh

Smt. Anju Singh[1]*, Dr. B. K. Padhi[2]

[1] PhD Scholar (Library Science), ISBM University, Kosmi (Nawapara), Gariyaband, Chhattisgarh, India

Email: mahi71115@rediffmail.com

[2] Associate Professor (Library Science), School of Library Science, ISBM University, Gariyaband, Chhattisgarh, India

Abstract- Engineering education in India has seen a major change in the last few years. Due to the generous increase in interest towards high quality education, information and communication technology has been accepted to enhance the education endeavor. Academic libraries in engineering institutions are well-known information organizations and play an essential function in meeting the information needs of users. The present chapter focuses on the analysis of data and interpretation of results related to research studies in engineering college libraries in Chhattisgarh from primary data collected from engineering college libraries affiliated to Government Engineering Colleges (GEC) of Chhattisgarh state. The results obtained based on the opinions of the responses received are presented in detail in this chapter. The results are clearly presented institution wise as percentage of respondents and total respondents as well as designation of the respondent. The data obtained from the detailed questionnaire of the study was analyzed statistically and the results are presented in detail with discussion in this chapter to meet the objectives of the study.

Keywords- Engineering Education, Information, Library, College

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INTRODUCTION

Engineering education in India has seen a major change in the last few years. Due to the generous increase in interest towards high quality education, information and communication technology has been accepted to enhance the education endeavor. Academic libraries in engineering institutions are well-known information organizations and play an essential function in meeting the information needs of users. The main objective of an academic library is to provide services to sustain the educational, educational, financial and scientific endeavor of the users of its parent institution. The importance of library in technical education like engineering and technology has been realized by the regulators of technical education and research in India and the regulatory body of engineering and technology education in India, All India Council for Technical Education (AICTE), has set some minimum standards. At present about 2388 engineering colleges are functioning in India. Government Engineering College Raipur was established in 2006 as a center for providing quality engineering education in Chhattisgarh. It is affiliated to Chhattisgarh Swami Vivekananda Technical University Bhilai and recognized by AICTE, New Delhi. The Government Engineering College Library is a premier library, with a vast digital and physical collection that provides a diverse range of services and resources including books and journals covering all major areas of science and engineering. The fully air-conditioned, Wi-Fi enabled floor is a valuable resource for learning, engagement and creativity not only in engineering but beyond the field of engineering.

OBJECTIVES OF THE STUDY

1. To know the availability of information infrastructure facilities in engineering college libraries affiliated to GEC, Raipur.
2. To analyze the use of emerging technologies for various functions and activities in the engineering college libraries under study.

METHODOLOGY

Method of research has been adopted in the presented study. Data has been obtained using questionnaire as an instrument. Data collection instrument like questionnaire was constructed and

tested through a pilot study by selecting some engineering college libraries in Raipur city. The study's aims and theories informed the development of a well-structured questionnaire, which was then sent out to all engineering college librarians associated with government engineering colleges in Chhattisgarh state. The goal was to gather data on the efficient implementation of new technology in these libraries. It was done at Government Engineering College (GEC), Raipur, Chhattisgarh.

Data collection

The following primary and secondary sources were used to collect data to study the effective use of emerging technologies in engineering college libraries in Chhattisgarh.

- Institutional and college library websites
- National Program on Technology Enhanced Learning (NPTEL)
- Annual reports and brochures, handouts, library guides of engineering colleges and their libraries.
- Questionnaire was filled by librarians/library in-charge.

Pilot study

The original study was conducted by some selected engineering colleges of Raipur. Since Raipur, Chhattisgarh has the highest number of engineering colleges, a pilot study was conducted using a questionnaire. Primary data was collected from engineering college libraries and analyzed. Based on the analysis of data obtained, the results are satisfactory but some librarians and experts gave suggestions to improve the questionnaire. Based on the pilot study, the researcher improved and standardized the structured questionnaire to conduct the final study.

Statistical tools

Statistical tools help in research to study the concentration and dispersion of user opinions. The average, that is, the arithmetic mean, is used to study the concentration of user opinions. Standard deviation is used to study the dispersion of observations.

ANALYSING AND INTERPRETING DATA

- **Study of population**

With the goal of better managing libraries and providing innovative library and information services to the community of users, this study aims to examine how engineering college libraries in Chhattisgarh make use of developing information technology. A structured questionnaire was created and sent out to librarians who work for engineering schools in Chhattisgarh state that are affiliated with the Government Engineering College in Raipur. For the convenience of study, engineering colleges are divided into five broad categories such as government, private aided, private unaided, minority and autonomous colleges.

- **Distribution of respondents on the basis of gender, age and professional experience.**

The gender-wise distribution of respondents was presented in Table 1. The analysis shows that; Most of the respondents belong to male category, i.e. 78.2%. Female respondents are only 21.8%. It is estimated that male LIS professionals dominate the engineering college libraries of Chhattisgarh as compared to female LIS professionals.

Table 1: Distribution of respondents by gender

Gender	Total	%
Male	133	78.2
Woman	37	21.8
Total	170	313.6
chi square	54.212	
Significant value.	0	

Table 2: Distribution of respondents based on age and experience

Age in years	Total (%)	Experience in years	Total (%)
25-30	21 (12.4)	<5	7 (4.1)
31-40	95 (55.9)	5-10	51 (30.0)
41-50	15 (8.8)	11-20	65 (38.2)
>50	39 (22.9)	>20	47 (27.6)
Total	**170 (100.0)**	Total	**170 (100.0)**
chi square	**93.812**	chi square	**43.741**
Significant value.	**0.00**	Significant value.	**0.00**

The age of the respondents was between 31-40 years (55.9%), followed by 22.9% i.e. 39 respondents were above fifty years of age, 12.4% i.e. 21 respondents were between 25-30 years and 15 respondents (8.8%) Was. In the age group of 41-50 years. On the other hand, among these respondents, i.e. 38.2% (65) had professional experience between 11-20 years, followed by 30% (51) who had experience between 5-10 years; 27.6% (47) have more than 20 years of experience and the least i.e. 7 respondents (4.1%) have less than five years of experience. It is good to note that more than half of the respondents are between 31-40 years of age (55.9%). These experienced LIS workers may continue to serve the engineering college community well by keeping up with the latest technological developments and educating themselves on all of the new tools at their disposal. The staff members with eleven to twenty years of experience work in the engineering college libraries that were part of the research. These professionals can be used to introduce many emerging technologies like RFID, QR Code Cloud Computer, Web Scale Discovery, etc., and develop an interactive and dynamic web portal to showcase all the library products and services in a single window platform. can be done.

Library infrastructure

Proper infrastructure facilities are a pre-requisite for providing quality library services. The library building, ambiance, study, browsing areas, proper and convenient seating arrangements will help in attracting more number of visitors to the library.

- **Location of Library Building: Institution wise**

The library building should be located in the center of the college and should have all the facilities. The institution-wise status of the library building is presented in Table 3.

Table 3: Location of Library Building: Institution wise

	Separate (%)	Part of main building(%)	Total	Chi	Significant value.
Government	1 (50.0)	1 (50.0)	2	30.456	0.000
personal assistance	4 (80.0)	1 (20.0)	5		
No personal assistance	58 (41.1)	83 (58.9)	141		
Minority	4 (80.0)	1 (20.0)	5		
Autonomous	10 (58.8)	7(41.2)	17		
Total	**77 (45.3)**	**93 (54.7)**	**170**		
chi square	**1.506**				
Significant value.	**0.22**				

Table 3 shows that most of the engineering colleges i.e. 54.7% do not have separate independent library buildings. Of which 58.9% colleges are private unaided, followed by 50% government and 41.2% self-aided. It is also found that 45.3% of the colleges have separate library buildings. The highest number among these is 80% of private aided and minority colleges. From the analysis it is inferred that the number of colleges which have libraries as a part of the main college building is high i.e. (54.7%) and only 45.3% of engineering colleges have constructed separate buildings for library and information center. Is.

- **Total Library Space**

Providing adequate space and creating ambiance is an important factor in attracting more number of users in the library. The location of the library should be convenient for both users and library staff to carry out routine work.

Library Location: Types of Colleges

Table 4 shows that, 100% of government colleges have library space of less than 500 sq. M. Moreover, the highest number i.e. 33.3% did not receive private assistance, followed by 23.5% swap colleges provided 500-1000 sq.m. Library area. This is followed by 27% private aided non-college, 20% minority and private aided colleges, which provide 1000-2500 sq.m. Library area and 29.4% from swap colleges provided 2500-5000 sq.m. For library area. Statistically significant variation was observed between different colleges (x2=29.378; signal 0.022) and available library spaces (x2=18.882; signal 0.001). The above statistics clearly indicate that private college managements are competitively supportive of providing good library space, whereas government colleges are providing comparatively less space as compared to private institutions. From the data it has been estimated that government colleges have provided very less space for library i.e. < 500 square metres. Compared with other private aided, unaided and self-supporting colleges.

Table 4: Library Area (in Sq. Meter): College

College	<500 (%)	500-1000 (%)	1000-2500 (%)	2500-5000(%)	>5000 (%)	Total	chi square	Significant value.
Government	2 (100.0)	(0.0)	(0.0)	(0.0)	(0.0)	2	29.378	0.022
personal assistance	1 (20.0)	1 (20.0)	1 (20.0)	1 (20.0)	1 (20.0)	5		
not receiving personal assistance	29 (20.7)	47 (33.3)	38 (27.0)	9 (6.4)	18(12.8)	141		
Minority	1 (20.0)	1 (20.0)	1 (20.0)	1 (20.0)	1 (20.0)	5		
Autonomous	2 (11.8)	4 (23.5)	3 (17.6)	5 (29.4)	3 (17.6)	17		
Total	**35 (20.6)**	**53 (31.2)**	**43 (25.3)**	**16 (9.4)**	**23 (13.5)**	**170**		
chi square	**18.882**							
Significant value.	**0.001**							

- **Library seating capacity: College type**

The library seating capacity based on the type of colleges is seen in Table 5. It is found that only 100 – 250 library seating arrangements are provided in all the government colleges under study. 80% of private aided colleges provide 250–500 library seats. 65.2% of private aided colleges provided 100–250 library seats, followed by 60% of minority colleges and 35.3% of private colleges. The seating capacity of different colleges (x2=0.748; Sig. 0.000) and libraries (x2=1.454e2; Sig. 0.000) were statistically and significantly different. From the analysis it has been estimated that only swap colleges have provided a seating capacity of more than 1000 in their libraries while other types of colleges have no such facility.

Table 5: Library seating capacity: College

College	<100 (%)	100-250 (%)	250-500 (%)	500-1000(%)	>1000 (%)	Total	chi square	Significant value.
Government	(0.0)	2 (100.0)	(0.0)	(0.0)	(0.0)	2	0.748	0.000
personal assistance	(0.0)	1 (20.0)	4 (80.0)	(0.0)	(0.0)	5		
No personal assistance	22 (15.6)	92 (65.2)	19 (13.5)	8 (5.7)	(0.0)	141		
Minority	(0.0)	3 (60.0)	1 (20.0)	1 (20.0)	(0.0)	5		
Autonomous	(0.0)	6 (35.3)	5 (29.4)	3 (17.6)	3 (17.6)	17		
Total	**22 (12.9)**	**104 (61.2)**	**29 (17.1)**	**12 (7.1)**	**3 (1.8)**	**170**		
chi square	**1.454E2**							
Significant value.	**0.000**							

- **Sitting facilities for individual faculty members:**

From Table 6, when it comes to separate seating facilities for teaching faculty members, the largest number of faculty, i.e. 62.4% from the total colleges expressed that separate seating facilities are provided for faculty in libraries. Of the respondents, 76.5% were from the autonomous

region, 61.7% were non-private aided; 60% from private aided and 60% from minority colleges. It is also found that government colleges have 100% faculty followed by 40% minority and private aided; 38.3% from unaided private colleges and 23.5% from autonomous colleges said that no separate seating arrangements were made for faculty in libraries. Different colleges (x2=4.806; signal 0.308) were not statistically different and seating provisions of libraries (x2=10.376; signal 0.001) were statistically and significantly different. From the analysis it is estimated that most of the private colleges are providing separate seating facilities for the faculty, but no such facility is available for the faculty in government colleges.

Table 6: Library seating provided for faculty: College wise

College	Yes (%)	No(%)	Total	chi square	Significant value.
Government	(0.0)	2 (100.0)	2	4.806	0.308
personal assistance	3 (60.0)	2 (40.0)	5		
No personal assistance	87 (61.7)	54 (38.3)	141		
Minority	3 (60.0)	2 (40.0)	5		
autonomous	13 (76.5)	4 (23.5)	17		
Total	**106 (62.4)**	**64 (37.6)**	**170**		
chi square	**10.376**				
Significant value.	**0.001**				

- **Air-condition facility in engineering college libraries versus type of college.**

Air conditioning improves the library environment; Overall it helps in attracting more number of users to the library. From Table 7, it is seen that majority i.e. 75.3% of the respondents opined that libraries are not air conditioned. Among them, 100% of the respondents from government colleges, followed by 80% from minorities, 78% from private aided colleges, 64.7% from self-help colleges and 60% from private aided colleges opined that their libraries were not air conditioned. There are plans to provide air conditioning in only 14.7% colleges. The least i.e. 10% of the colleges have already provided air condition facility in their library. From the analysis it was inferred that the air condition condition of different colleges (x2=45.301; Sig. 0.000) and libraries (x2=93.229; Sig. 0.000) were statistically and significantly different.

Table 7: Air conditioner facility provided in the library and type of college.

College	Yes (%)	No(%)	planned (%)	Total	chi square	Significant value.
Government	(0.0)	2 (100.0)	(0.0)	2	45.301	
personal assistance	3 (60.0)	1 (20.0)	1 (20.0)	5		
No personal assistance	10 (7.1)	110 (78.0)	21 (14.9)	141		
Minority	**1** (20.0)	4 (80.0)	(0.0)	5		
Autonomous	3 (17.6)	11 (64.7)	3 (17.6)	17		
Total	**17 (10.0)**	**128 (75.3)**	**25 (14.7)**	**170**		
chi square	**93.229**					
Significant value.	**0.000**					

- **Safety and disaster management measures in different types of college libraries.**

Table 8 shows that, 100% of the respondents of government engineering college libraries were of the opinion that no safety and disaster mitigation measures were taken. After government college libraries, the college libraries that did not take safety and disaster mitigation measures were 40% minority, 23.5% autonomous and 22.7% private unaided college libraries. Generally, 61.8% of faculty from all types of engineering college libraries said that security measures were in place. Of them, 76.5% were from autonomous college libraries, followed by 61% from private aided, 60% from privately aided and minority college libraries. Only private aided (40%) and unaided (16.3%) college libraries have planned to take safety and disaster mitigation measures. From the analysis it is inferred that autonomous and private unaided college libraries are more conscious in implementing mitigation measures as compared to government and private aided college libraries.

Table 8: Safety and Disaster Mitigation Measures Implemented in Library: College

College	Yes(%)	No(%)	planned (%)	Total	chi square	Significant value.
Government	(0.0)	2 (100.0)	(0.0)	2	25.017	0.002
personal assistance	3 (60.0)	(0.0)	2 (40.0)	5		
No personal assistance	86 (61.0)	32 (22.7)	23 (16.3)	141		
Minority	3 (60.0)	2 (40.0)	(0.0)	5		
Autonomous	13 (76.5)	4 (23.5)	(0.0)	17		
Total	**105 (61.8)**	**40 (23.5)**	**25 (14.7)**	**170**		
chi square	**90.294**					
Significant value.	**0.000**					

- **Security measures taken by various types of college libraries:**

Based on the data shown in Table 9 for the distribution of library security system according to engineering colleges, all the government college libraries of the study have adopted manual security system followed by 60.0% private support and minority; 43.3% are not receiving personal assistance; 35.3% from autonomous college libraries. CCTVs are adapted by 29.4% autonomous, 24.8% private unaided and 20% private aided college libraries and not by government and minority college libraries. The RF tracking system is adapted by 40% minority college libraries, 35.3% autonomous college libraries, 31.9% private unaided, 20% private aided and none of the government college libraries. It is important to note that the manual security system is the system among engineering college libraries. Engineering college libraries were statistically equal (x2=8.254; signal 0.495) and security systems (x2=10.388; signal 0.000) were statistically different.

Table 9: Library Security Arrangements: College

College	Manual (%)	CCTV(%)	RF Tracking System (%)	Total	chi square	Significant value.
Government	2 (100.0)	(0.0)	(0.0)	2	8.294	0.495
personal assistance	3 (60.0)	1 (20.0)	1 (20.0)	5		
No personal assistance	61 (43.3)	35 (24.8)	45 (31.9)	141		
Minority	3 (60.0)	(0.0)	2 (40.0)	5		
Autonomous	6 (35.3)	5 (29.4)	6 (35.3)	17		
Total	**75 (44.1)**	**41 (24.1)**	**54 (31.8)**	**170**		
chi square	**10.388**					
Significant value.	**0.006**					

- **Ways and means of promoting library products and services:**

LIS professionals are needed to act as public relations officers (PROs) to promote information products and services. This process requires the adoption of various marketing tools, principles and strategies. Some of the following methods are tested against the promotion of library resources and services. As per data analysis among different engineering college libraries in Table 10 it is predicted that, after 100% respondents from government college libraries 64.7% from independent, 60% from minority, 30.4% not receiving private aid and 30.4% from private aided colleges. are 20%. Libraries opined that user orientation programs were organized regularly. 23.5% swapped from college libraries, 5.7% from not privately aided and no other college opined that special invited lectures from resource persons invited on various occasions are used. 20% private aided and 12.8% private aided colleges and none of the other colleges expressed the opinion that library programmes/events etc. are regularly displayed on the notice board. 20% from minority colleges and 8.5% from private aided colleges did not opine that a visitor's book was maintained for comments on the library. Use of suggestion boxes and user feedback forms in libraries was opined by 25.5% of respondents who did not receive personal assistance, followed by 20% who did not receive personal assistance and 11.8% from self-supporting colleges. 2.8% of private unaided colleges used the table of contents. 40% private assistance, 20% minority and 12.1% private assistance did not provide a list of relevant websites for improving library services. However, user orientation programs are primarily used by LIS professionals at various ranges of colleges to promote library resources and services. From the analysis it was inferred that no statistical significance was observed among different colleges (x2=3l.727; signal 0.286) and regularly conducting user orientation programs was used to provide library services and there was statistical and significant The most common method is (x2=1.596E2; Sig 0.000).

Table 10: Methods used to promote library resources and services: College wise

College	1(%)	2(%)	3(%)	4(%)	5(%)	6(%)	7(%)	8(%)	Total	chi square	Significant value
Government	2 (100.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	2	31.727	0.286
personal assistance	1 (20.0)	(0.0)	1 (20.0)	(0.0)	1 (20.0)	(0.0)	2 (40.0)	(0.0)	5		
No personal assistance	43 (30.4)	8 (5.7)	18 (12.8)	12 (8.5)	36 (25.5)	4 (2.8)	17 (12.1)	3 (2.1)	141		
Minority	3 (60.0)	(0.0)	(0.0)	1 (20.0)	(0.0)	(0.0)	1 (20.0)	(0.0)	5		
Autonomous	11 (64.7)	4 (23.5)	(0.0)	(0.0)	2 (11.8)	(0.0)	(0.0)	(0.0)	17		
Total	**60 (35.3)**	**12 (7.1)**	**19 (11.2)**	**13 (7.6)**	**39 (22.9)**	**4 (2.4)**	**20 (11.8)**	**3 (1.8)**	**170**		
chi square	**1.596E2**										
Significant value.	**0.000**										

Note: 1. User orientation programs are organized regularly 2. Special invited lectures are arranged on various occasions by resource persons 3. Library events/programs etc. are regularly displayed on notice boards 4. Library A visitor's book is maintained for comments and comments and suggestions if any are considered. 5. Suggestion boxes and user feedback forms are provided at prominent places in the library for the improvement of the library and given Suggestions/Feedback are considered 6. Table of Contents Service 7. Provide list of relevant websites 8. All of the above

CONCLUSION

Analysis of availability of information infrastructure in libraries of engineering colleges of Chhattisgarh is an important process. This study follows a professional standard of research, with strict guidelines and uses appropriate data and references. Our study reveals the important role of information technology in higher educational institutions, which helps students to study in different subjects and boost their academic stimulation. In the current scenario. Intensive efforts are required from the librarians, faculty members and concerned authorities of engineering colleges to provide value added services to their user community. From the final result of this study we find that the use of information technology can bring a positive change in libraries. Through this, students get access to appropriate and innovative resources that enhance the quality of their studies and research.

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Corresponding Author

Smt. Anju Singh*

PhD Scholar (Library Science), ISBM University, Kosmi (Nawapara), Gariyaband, Chhattisgarh, India

Email: mahi71115@rediffmail.com