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Use of information resources in engineering college libraries of Dakshina Kannada and Udupi Districts: A comparative study

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Information is an essential commodity for study, teaching and research. Libraries in engineering institutions play a crucial role in fulfilling the information needs of users. A study on the use of information resources by the students, faculty members and research scholars in the engineering college libraries of Dakshina Kannada and Udupi Districts was undertaken during August 2013. Questionnaire was used as the data collection tool. The responses on awareness and satisfaction level on various library resources were gathered using Likert's 5 point scale. The responses were analysed using two way ANOVA, Tukey HSD, Factor Analysis and Fisher's Exact Test. The analysis showed that respondents do experience inadequacy of information resources in their college libraries. The hypothesis formulated in this connection was proved by the study. Results showed that there were significant differences in the satisfaction level of information resources among the respondents of various categories. There is need to evaluate the library resources, facilities and services regularly to meet the changing needs of the users.

Keywords: Engineering college libraries; Information resources; Students; Faculty members; Research scholars

Introduction

Information is a key resource for the progress and development of any organisation. Academic libraries in engineering institutions are prominent information organisations and play a crucial role in fulfilling the information needs of users. Engineering education is a skilful, artful and constructive education. Technical education plays a vital role in the social and economic development of our nation. Engineers need latest information in their subjects to support their learning, teaching, and other research requirements. The library professionals working in these institutions should pay importance to acquire appropriate and need based literature in those subjects to meet the information needs of their users. Identifying information needs and usage pattern of information resources, facilities and services of the users of engineering institutions is important for the development of the library and information system.

All India Council for Technical Education (AICTE), an apex organization is responsible for the planning and the overall development of technical education in India. In Karnataka, Visvesvaraya Technological University (VTU) was established in 1998 by the Government to promote a planned and sustainable development of technical education consistent with state and national policies. The University offers undergraduate, post graduate and Ph.D programmes in the fields of engineering, management and computer applications. Presently, there are 201 colleges affiliated to the University. The colleges are categorised as government, private-aided, and private-unaided based on the type of funding. A few colleges are classified as Minority Linguistic and Minority Religious based on the minority status of languages and religions. Further, these colleges are placed under the Autonomous and Non-Autonomous category of institutions based on the autonomy granted by UGC. The Manipal Institute of Technology (MIT) was the first engineering college established in 1957 in the Udupi district (formerly Dakshina Kannada district). After that in 1960, The Karnataka Regional Engineering College, presently known as National

Institute of Technology Karnataka (NITK), was established in Dakshina Kannada district. At present there are 20 Engineering Colleges in Dakshina Kannada and Udupi districts affiliated to VTU, AICTE and MAHE. Out of these 17 are in Dakshina Kannada and 3 are in Udupi districts.[1]

Review of literature

Studies related to the information need and information seeking behaviour of the students, faculty members and research scholars of various colleges and universities in India and abroad were undertaken by various authors[2-14]. The studies revealed that engineers need current information in their respective fields. The purpose and use of information resources by the students, faculty members and research scholars in the Engineering colleges and universities have also been studied by several authors[15-29]. Results of these studies revealed that the main purpose of visit to the library by the respondents is for academic work. They consider text books, journals, and newspapers and magazines as important information resources. The respondents prefer print resources over electronic resources, because of convenience, reliability, and ease of use. Faculty members and research scholars consult OPAC to locate the required reading materials whereas students seek the help of the library staff. Internet is mainly used to update their knowledge and support their research and to prepare for teaching. All the respondents from the institutions in various studies expressed the need for organizing literacy training programmes by the libraries to enable them to use information resources more efficiently and effectively.

The studies by Lohar and Kumbar[30], Latha and Nagarajan[31], Raju[32], Vasanthi and Ravi[33] and Thauskodi[34] revealed that lack of knowledge, lack of time, information overload, lack of necessary IT infrastructure, lack of space, lack of availability of current journals, insufficient skills and training were the barriers to the use of information resources.

It is clear from the above reviews that awareness and use of information resources requires information literacy through the user education for both, users and library staff. Libraries should not only see themselves as users of the Internet, but also as providers of information from the Internet. There is a growing need to support the users in the form of training to equip them with skills needed for the effective exploitation of the online resources. The use of information resources in engineering college libraries of Dakshina Kannada and Udupi districts was conducted and results of the study are presented in this paper.

Objectives of the study

- To understand the information requirements of the students, faculty members and research scholars;
- To know the preference and use of information resources in the colleges under study;
- To assess the satisfaction level of the respondents on the available information resources of the library;
- To identify the problems faced by the respondents and to suggest measures for improvement in the library and information services available in the colleges under study.

Hypotheses

The following hypotheses were framed in this connection:

There is significant difference in the preference attached to the channels of information by students, faculty members and research scholars.

There is significant difference in the preference of information resources among the respondents of various categories.

The respondents do experience inadequacy of information resources in the existing engineering college library collection.

Methodology

There are 20 engineering colleges in Dakshina Kannada and Udupi districts, of which 17 are in Dakshina Kannada and 3 are in Udupi district. Since the use of information resources requires certain minimum infrastructure in the libraries, the colleges established after 2006 were excluded from the study. Since the population was large, it was decided to go for a sample study. The sample size for the students, faculty members and research scholars was determined based on the Sampling techniques by Murthy[35]. Stratified sampling technique was used for

the selection of students, faculty members and research scholars. Out of the total population of 16883, a sample of 1233 respondents was considered for the study which included 998 students, 88 faculty members and 147 research scholars. Of 1233 target respondents, the study received 1098 responses with a response rate being 89 per cent (Table 1).

Analysis

Information resources

Analysis shows that all the engineering colleges considered for the study have a good collection of printed information resources such as text books, reference books, subject journals, project reports, standards, conference/seminar proceedings, CD/DVD ROMS, and newspapers and magazines. Only MIT, NITK, NMAMIT, PACE, and SJEC indicated the presence of theses/dissertations. This is because only these colleges have a research centre in the engineering discipline. Only NMAMIT library stated the presence of e-books. The online journals collection is found only in seven engineering colleges. The reason being all these libraries are members of consortium under INDEST-AICTE. However, the online journals and online databases are comparatively less in other colleges under study compared to MIT, NITK, and the NMAMIT library which has 7 to 8 online databases with more than 1100 online journals in Engineering.

Preference of information channels

Table 2 shows that friends/colleagues are the main channels of information seeking among majority (91.2%) of the respondents, followed by the Internet (79.8%).

Category-wise responses (Table 3) show that majority of the students (92%) and faculty members (89.8%) prefer friends/colleagues as their preferred channel, whereas majority (91.6%) of the research scholars

Table 1—Institutions covered in the study

Institutes	Year of establishment	Total population	Questionnaire distributed	Responses received
NITK	1960	2884	258	221
KVGCE	1986	1335	88	78
VCET	2001	960	64	56
CEC	2001	1146	76	67
PACE	1999	1342	92	81
SJEC	2002	1336	90	79
SDIT	2006	765	51	46
SIT	2006	1145	75	66
MIT	1957	3182	247	239
NMAMIT	1986	2022	141	118
MIET	2004	766	51	47
Total		16883	1233	1098

Table 2—Preference of information channels

Channels	Preferred (n=1098)	Percentage	Ranking
Friends/Colleagues	1001	91.2	1
Internet	876	79.8	2
Consult faculty members/research supervisors	754	68.7	3
Self Purchase	672	61.2	4
Attending conferences / seminars / refresher courses	606	55.2	5
Other Library & Inf. Centres	567	51.6	6

Note: Numbers shown in parentheses are percentages

Table 3—Preference of channels of information – category wise

Channels	Category					
	Students (n=878)	Preference	Faculty members (n=88)	Preference	Research Scholars (n=132)	Preference
Friends/Colleagues	808 (92.0)	1	79 (89.8)	1	114 (86.4)	2
Internet	685 (78.0)	2	70 (79.5)	2	121 (91.6)	1
Consult faculty members/Research Supervisors	590 (67.2)	3	60 (68.2)	4	104 (78.8)	3
Self Purchase	526 (60.0)	4	54 (61.4)	6	92 (69.7)	6
Attending conferences/Seminars/Refresher Courses	441 (50.2)	5	65 (73.9)	3	100 (75.7)	4
Other Library & Inf. Centres	417 (47.5)	6	55 (62.5)	5	95 (71.9)	5

χ^2 (10) = 20.727 p=.023 sig
Note: Numbers shown in parentheses are percentages

prefer the internet for seeking information. There is a (χ^2 (10)= 20.727, p=.023 sig) significant difference in the preference of various channels of information by the respondents of various categories. Students prefer friends/colleagues more as compared to other categories, whereas research scholars prefer the Internet more compared to other categories. So the hypothesis 1 was proved.

Awareness of information resources

Awareness about the library collection is very important for effective use of the information resources by the respondents. Majority of the respondents are aware of most of the information resources of their libraries. Overall, the respondents are not much aware of e-books and theses/dissertations (Table 4)**.** The reason is that in majority of the respondent colleges these resources do not exist. Category wise responses show that, newspapers and magazines are the most popularly known information resources among all the category of respondents.

Importance of information resources

It is observed (Table 5) that, majority (86.33%) of the respondents considered text books as the most important information resource for their academic and research work. Newspapers and magazines (71.98%) followed by online journals (61.54%) are considered as next important information resources by the respondents. The least important information resources are CD/DVD ROMS (49.07%), conference/seminar proceedings (46.93%) and project reports (44.84%).

Comparison among the categories showed that most (85.95%) of the students, 93.51% of the faculty members and 84.41% of the research scholars considered text books as their most important information resource. Newspapers and magazines (72.03%) are the next important information resource for the students, whereas 75% of the faculty members and 83.15% of the research scholars considered online journals as the next important information resource (Table 6).

Two way ANOVA: F (2, 9773) = 328.890, p=.000
HS – For resources

F (22, 9773) = 9.817, p=.000
HS – For resources and categories

To test this hypothesis, the two way ANOVA test was applied and it was found that there is significant difference in the preference of various information resources (F (2, 9773) = 328.890, p=.000) among various resources and resources and categories (F (22, 9773) = 9.817, p=.000).

The Tukey HSD was done to further evaluate the above test and it was found that the difference is significant (p=.000) among the students and faculty members, and among students and research scholars.

Table 4—Awareness of information resources – category wise

Information Resources	Category			Total (n=1098)
	Students (n=878)	Faculty members (n=88)	Research Scholars (n=132)	
Newspapers/Magazines	818 (93.2)	88 (100.0)	127 (96.2)	1033 (94.1)
Reference Books	817 (93.1)	76 (86.4)	124 (93.9)	1017 (92.6)
Text Books	776 (88.4)	76 (86.4)	127 (96.2)	979 (89.2)
Subject Journals (printed)	725 (82.6)	84 (95.5)	113 (85.6)	922 (84.0)
CD/DVD ROMS	666 (75.9)	76 (86.4)	116 (87.9)	858 (78.1)
Project Reports	648 (73.8)	58 (65.9)	92 (69.7)	798 (72.7)
Conference/Seminar Proceedings	588 (67.0)	71 (80.7)	109 (82.6)	768 (69.9)
Online Databases	553 (63.0)	60 (68.2)	115 (87.1)	728 (66.3)
Online Journals	497 (56.6)	64 (72.7)	127 (96.2)	688 (62.7)
Standards	463 (52.7)	63 (71.6)	71 (53.8)	597 (54.4)
Theses/Dissertations	359 (40.9)	47 (53.4)	108 (81.8)	514 (46.8)
e-books	39 (4.4)	10 (11.4)	6 (4.5)	55 (5.0)

Note: Numbers shown in parentheses are percentages

Table 5—Importance of information resources

Information Resources	N	Mean	SD	Mean %	Ranking
Text Books	979	4.32	.905	86.33	1
Newspapers and Magazines	1033	3.60	1.185	71.98	2
Online Journals	688	3.08	1.332	61.54	3
e-books	55	3.04	1.336	60.72	4
Subject Journals (printed)	922	3.04	1.336	60.72	4
Online Databases	728	2.72	1.307	54.40	5
Reference Books	1017	2.59	1.211	51.82	6
Theses/Dissertation	514	2.59	1.286	51.71	7
Standards	597	2.53	1.181	50.59	8
CD/DVD ROMS	858	2.45	1.263	49.07	9
Conference/Seminar Proceedings	768	2.35	1.197	46.93	10
Project Reports	798	2.24	1.194	44.84	11
(Overall mean and mean %)		2.88	1.364	57.6	

Note: (mean %) rating: 20-36% - not at all important, 37-52% - somewhat important, 53-68% - moderately important, 69- 84% - important, 85-100% - most important'

Table 6—Importance of information resources – category wise

Information Resources	Students		Faculty Members		Research Scholars	
	N	Mean %	N	Mean %	N	Mean %
Text Books	776	85.95	76	93.51	127	84.41
Newspapers and Magazines	818	72.03	88	71.82	127	71.81
Online Journals	497	54.29	64	75.00	127	83.15
e-books	39	56.55	10	74.76	6	76.99
Subject Journals (printed)	725	56.55	84	74.76	113	76.99
Online Databases	553	50.96	60	66.67	115	64.52
Reference Books	817	49.87	76	61.05	124	59.03
Theses/Dissertation	359	45.91	47	61.70	108	66.67
Standards	463	46.61	63	59.37	71	68.73
CD/DVD ROMS	666	46.40	76	59.21	116	57.76
Conference/Seminar Proceedings	588	41.39	71	65.63	109	64.59
Project Reports	648	42.01	58	53.45	92	59.35
(Overall mean and mean percentage)		54.00		68.00		69.40

Note: (mean %) rating: 20-36% - not at all important, 37-52% - somewhat important, 53-68% - moderately important, 69- 84% - important, 85-100% - most important

But the difference is not significant (p=.534) among the faculty members and research scholars. Hence hypothesis 2 is partially proved.

Satisfaction level of information resources

Based on their awareness and expectations, respondents opinion about the satisfaction level of the information resources was collected. Table 7 shows that, 63.80 is the average mean percentage of the satisfaction level of the information resources. It means that overall respondents are moderately satisfied with the information resources of their library. Further responses show that, newspapers and magazines with a mean percentage of 78.59 ranks first followed by text books (74.71%) and subject journals (printed) (68.72%) are the more satisfied information resources. This is because majority of the respondents are aware of these resources and their expectations are also high.

Online journals, online databases, reference books, standards, CD/DVD ROMS, conference/seminar proceedings, project reports are moderately satisfactory information resources.

Theses/dissertations with a mean percentage of 48.64 and e-books 43.64% are found to be the least satisfactory information resources among the respondents. Lack of awareness due to non availability of these resources in a majority of the respondent colleges may be the reason for less satisfaction.

Gap analysis of the importance of information resources and satisfaction level of information resources

The gap analysis identifies the performance of the libraries as perceived by the respondents. Gap analysis identifies the gaps between the expectation of the information resources and the satisfaction level of the information resources. The mean values are derived by subtracting the 'mean score of importance of information resources' by the 'mean score of satisfaction of information resources.' This comparison becomes the gap analysis.

It is observed (Table 8) that, the gap is highly significant in all the information resources as $p<0.01$ for all the information resources. Among all the significant gap, newspapers and magazines (0.33),

Table 7—Satisfaction level of information resources

Information Resources	N	Mean	SD	Mean %	Ranking
Newspapers and Magazines	1033	3.93	1.08	78.59	1
Text Books	979	3.74	1.11	74.71	2
Subject Journals (printed)	922	3.44	1.13	68.72	3
Online Journals	688	3.41	1.25	68.11	4
Online Databases	728	3.32	1.17	66.46	5
Reference Books	1017	3.19	1.29	63.74	6
Standards	597	3.19	1.17	63.82	7
CD/DVD ROMS	858	3.16	1.25	63.19	8
Conference/Seminar Proceedings	768	3.14	1.13	62.71	9
Project Reports	798	3.09	1.11	61.70	10
Theses/Dissertation	514	2.43	0.96	48.64	11
e-books	55	2.18	0.76	43.64	12
(Overall mean and mean %)		3.19		63.80	

Note: (mean %) rating: 20-36% - highly dissatisfied, 37-52% -dissatisfied, 53-68% - moderately satisfied, 69 - 84% -satisfied, 85-100% - highly satisfied

Table 8—Gap between importance and satisfaction level of information resources

Information Resources	Mean Importance	Mean Satisfaction	Gap**	T test*	P value
Text Books	4.32	3.74	-0.58	13.42	0.000
Newspapers and Magazines	3.60	3.93	0.33	6.82	0.000
Online Journals	3.08	3.41	0.33	5.99	0.000
e-books	3.04	2.18	-0.86	7.57	0.000
Subject Journals (printed)	3.04	3.44	0.40	11.33	0.000
Online Databases	2.72	3.32	0.60	11.24	0.000
Reference Books	2.59	3.19	0.60	3.30	0.001
Theses/Dissertations	2.59	2.43	-0.16	13.16	0.000
Standards	2.53	3.19	0.66	13.24	0.000
CD/DVD ROMS	2.45	3.16	0.71	15.90	0.000
Conference/Seminar Proceedings	2.35	3.14	0.79	17.28	0.000
Project Reports	2.24	3.09	0.85	13.42	0.000

Note: * Wilcoxon Signed Ranks Test. All $p < 0.001$ sig.
** Gap = satisfaction Mean Score – Importance Mean Score

online journals (0.33), subject journals (printed) (0.40), online databases (0.60), reference books (0.60), standards (0.66), CD/DVD ROMS (0.71), conference/seminar proceedings (0.79), and project reports (0.85) have the positive gap, which shows that all these information resources are adequate. Whereas for e-books (-0.86), text books (-0.58), and theses/dissertations (-0.16), the gap is negative, which shows that these resources are inadequate in the respondent engineering college libraries.

It is clear from the study that the information resources available in the respondent college library are not fully adequate. The resources are either not available or inadequate or they are not trained to use them which

may be the reason for the negative gaps in the study. Hence the hypothesis 3 is proved to be correct.

Problems faced in searching for information

Table 9 shows that majority 877(79.9%) of the respondents were positive in their opinion about the search of information, whereas 221(20.1%) of the total respondents were negative in their opinion towards the search of information.

Similarly, the category wise response shows that 80% of the students, 81.8% of the faculty members, and 78% of the research scholars showed a positive opinion about the search of information in their respective libraries. The Chi-square test shows that the opinion of the users varies significantly (χ^2 (2) = 0.783, p=0.000, sig) among the category of respondents. Research scholars faced more problems compared to other categories while searching the information in their libraries.

Types of problems faced while searching for information

It is clear from the study that, lack of time (49.8%) and limited access to computers with IT infrastructure (48.4%) are the main barriers that affect the users while searching information from the library. The remaining problems faced are presented in Table 10.

Sources used to solve the problems

Users seek help through various sources to solve the problems faced while searching information in the library. The responses (Table 11) show that majority (56.6%) of the respondents solve the problems independently, whereas 40.3% seek the help of friends.

Need of user education and training

Training is an important aspect in the libraries on the use of resources, facilities and services. Majority

Table 9—Opinion about the problems faced

Opinion	Respondents			Total
	Students	Faculty Members	Research Scholars	
Yes	176 (20.0)	16 (18.2)	29 (22.0)	221 (20.1)
No	702 (80.0)	72 (81.8)	103 (78.0)	877 (79.9)
Total	878 (100.0)	88 (100.0)	132 (100.0)	1098 (100.0)

χ^2 (2) = 0.783, p=.000

Note: Numbers shown in parentheses are percentages

Table 10—Problems faced while searching for information

Problems Encountered	Category			Total (n=221)
	Students (n=176)	Faculty Members (n=16)	Research Scholars (n=29)	
Lack of time	78 (44.3)	12 (75.0)	20 (69.0)	110 (49.8)
Limited access to computers with IT infrastructure	90 (51.1)	6 (37.5)	11 (37.9)	107 (48.4)
Too much information retrieved	35 (19.9)	10 (62.5)	22 (75.9)	67 (30.3)
Lack of awareness in the use of library resources	56 (31.8)	5 (31.3)	3 (10.3)	64 (29.0)
Lack of Information search skills	36 (20.5)	3 (18.8)	9 (31.0)	48 (21.7)
Lack of staff assistance	22 (12.5)	2 (12.5)	2 (6.7)	26 (11.8)

Note: Numbers shown in the parenthesis are percentages

Table 11—Sources used to solve the problems

Sources Used	Category			Total (n=221)
	Students (n=176)	Faculty Members (n=16)	Research Scholars (n=29)	
By Self	99 (56.3)	12 (75.0)	14 (48.3)	125 (56.6)
With the help of friends	77 (43.8)	5 (31.3)	7 (24.1)	89 (40.3)
With the help of faculty members	18 (10.2)	3 (18.8)	4 (13.8)	25 (11.3)
With the help of library staff	34 (19.3)	9 (56.3)	7 (24.1)	50 (22.6)

Note: Number in the parentheses are percentages

Table 12—Need of user education and training

Areas of Training	Responses (n=1098)	Percentage
Awareness to library resources and services	776	70.7
How to use the library catalogue	655	59.7
Online information gathering and seeking skills	499	45.4
How to access articles from the respective e-journals	382	34.8
How to write references and citations	251	22.8

(70.7%) of the respondents expressed that they need training in the area of awareness to library resources and services, whereas 59.7% preferred to have training on the use of library catalogue (Table 12).

The 45.4% of the respondents opined that they need training on online information gathering and seeking skills, 34.8% expressed the need for training in how to access articles from respective journals, and 22.8% needed training in how to write references and citations.

Conclusion

It is clear from the study that a greater part of the respondents prefer friends/colleagues and the Internet as their main channel of information seeking. It is also found that text books are the most important information resources among the respondents, followed by newspapers and magazines and online journals. The least important information resources are CD/DVD ROMS, conference/seminar proceedings and project reports. The respondents do experience inadequacy of information resources in the existing engineering college library collection. Lack of time and limited access to computers with IT infrastructure are the main problems for seeking information resources. Majority of the respondents solve their problems independently while searching information and they also expressed that they need training in the area of awareness to library resources and services and in the use of library catalogue/OPAC.

The findings of this study indicate that information seeking may be motivated by a wide variety of needs including, personal and professional needs. The successful operation of a library depends to a large extent on the type of library collection. The collection should meet the needs and requirements of the users. Consequently, librarians must be aware of how students seek information. Knowledge of user information needs and information-seeking behaviour is imperative to develop a valuable collection, and to improve the facilities and services.

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