Use of Electronic Information Resources by Faculty Members of Engineering and Technology Institute Libraries in Gujarat State: A Survey

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Abstract

The present paper throws light on the use of e-resources by faculty members working in some selected engineering and technology institutes of the Gujarat state (India). The main purpose of the study is to determine the use of e-resources, the skills and the various purposes of their use by the faculty. Further, the paper aims to address the problems faced by the faculty members while accessing e-resources, their perception on features of e-resources and their views on usefulness of e-resources compared to that of print resources. At the end paper also highlights the use of different types of databases and the kind of training required by the faculty for the effective use of e-resources.

Keywords

E-Resources, Libraries, Engineering and Technology, User Study, Gujarat State

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INTRODUCTION

In the present age higher education has made a lot of impact by providing quality education in India. The revolution in the Information and communication technologies has brought a drastic changes in the transfer of information without geographical barrier.The way the libraries collect, process, store, retrieve and disseminate information has been changing constantly. This revolution is taking place in almost all the sectors and the educational sectors are not an exception to this. Modern libraries are in a transition stage from the manual to the electronic system. The Libraries and Information Centres are no longer self-sufficient but are linked through electronic network of various types. The advantages of technology have brought so extensive changes that it is not easy to assess their total effect. It is clear that libraries are in a state of fundamental transition and are innovated rapidly in the electronic environment. Electronic information resources play a prominent role in facilitating access to the required information to the users in an easy and expeditious manner. Hence, considering its need, importance and the future growth aspect, it is pertinent to know the information need especially the Electronic Information Resources and how faculty members access these resources thereby enhance their teaching and research, hence, need for the study.

Gujarat is considered as one of the highly developed states among all other states in India. Gujarat has several special institutes which are modernizing their libraries. The scope of the present study is limited to use of electronic information resources by faculty members of some selected engineering institute libraries in Gujarat State. The present study is limited to ten selected engineering institutes in Gujarat State. Top engineering institutes are selected based on rankings of different annual surveys conducted and published by top Newspapers, Magazines and organizations, some of them are Careers360 (2012, 2013, 2014, 2015, 2016), DNA (2010), Hindustan Times (2010), i3RC Times Top Engineering Institute Rankings (2014, 2015, 2016), India Today (2009, 2010, 2011, 2012, 2013, 2014, 2015 & 2016), Outlook (2009, 2010, 2011, 2012, 2013, 2014, 2015 and 2016). To undertake the research in all institutes is not possible at the level of an individual researcher, due to constraints imposed by money, time, energy and efforts. The population of this research are faculty members from engineering and technology institutes.

OBJECTIVES OF THE STUDY

The main objective of the present study is to find out, explore, examine and evaluate the usage and impact of electronic information resources in teaching and research by faculty members of engineering and technology institute libraries in Gujarat state. However, the specific objectives of the study are:

1. To find out the awareness, knowledge and skills of faculty in the use of EIRs.
2. To reveal the use and need of EIRs for faculty members of engineering and technology institute libraries.
3. To know the problems and hurdles faced by the faculty members while accessing and using EIRs.
4. To determine the impact of EIRs on academic community serving in engineering and technology institutes.
5. To assess the training needs and to know whether the libraries are providing required training for an effective use and access to EIRs.

HYPOTHESES

Following are the major hypotheses formulated for the study

- Faculty members have shown a high degree of awareness about the importance of Electronic Information Resources.
- Faculty members need proper training, orientation and guidance on how to access and use Electronic information resources.
- Availability & use of Electronic Information Resources has made a significant impact in the form of teaching and contribution of research papers of faculty members.

METHODOLOGY

The present study is confined to the some selected Faculty Members of Engineering and Technology Institutes in Gujarat State. The Questionnaire method was adopted for data collection. The questionnaire was designed keeping in view the objectives and various facets of the study. A total of 1000 questionnaires were distributed to collect the primary data, out of which 834 duly filled in questionnaires were received from the respondents with a response rate of 83.40%. The primary data were analyzed using SPSS statistical package and systematically presented in the tabular form.

DATA ANALYSIS AND INTERPRETATION

Institution Wise Distribution of Questionnaire

It indicates institution-wise distribution of questionnaires. The highest response is from DhirubhaiAmbani Institute of Information and Communication Technology (DA-IICT) with 93.00 % followed by Nirma University – Institute of Technology 90.00%, LalbhaiDalpatbhai College of Engineering 89.00%, Marwadi Education Foundation's Group of Institutions (MEFGI) 87.00%, SardarVallabhbhai National Institute of Technology (SVNIT) 87.00%, PanditDeendayal Petroleum University 84.00%, Indian Institute of Technology Gandhinagar80.00%, Charotar University of Science and Technology (CHARUSAT), Changa 79.00%, Atmiya Institute of Science and Technology 74.00%, and Dharmsinh Desai University (DDU), Nadiad71.00%(Fig 1).

Qualification-wise distribution of respondents

It is found from the study that, out of total 834 respondents, 544 (65.23%) respondents are post graduates, followed by 204 (24.46%) are Doctorate, 58 (6.95%) are having bachelor degree and 28 (3.36%) of the respondents are of post-doctoral degree holders

Designation wise distribution of respondents

The study shows the designation-wise distribution of respondents. Of the total 834 respondents surveyed, 696 (83.45%) respondents are in the cadre of Assistant Professor, followed by 72 (8.63%) respondents are Associate Professors, 54 (6.47%) respondents are Professors and 12 (1.44%) respondents are Lecturers. The data clearly indicates that the majority of the faculty members are Assistant Professors only.

Awareness about source of information to use for locating/accessing information

It is observed from the table 1 that majority of faculty members are well aware of computer based services like OPAC, Online databases, e-journals etc. The data reveals that 656 (78.66%) of faculty members are aware of online resources (E-journals/E-books/databases), 612 (73.38%) respondents aware of print sources, followed by, 602 (72.18%) respondents aware of OPAC, about 532 (63.79%) respondents aware of electronic resources (CDs, DVDs, Blue Ray disc, whereas,400 (47.96%) respondents aware of

electronic theses and dissertations, 292 (35.01%) and 198 (23.74%) respondents aware of Virtual libraries and information gateways respectively.

Table 1: Awareness about source of information to use for locating/accessing information

Sl. No.	Source of Information	No. of Respondents	(%)
1	Online resources (E-journals/E-books/databases)	656	78.66
2	Print Sources	612	73.38
3	OPAC (Online Public Access Catalogue	602	72.18
4	Electronic resources (CDs, DVDs, Blue Ray disc)	532	63.79
5	Electronic Theses and Dissertations	400	47.96
6	Virtual libraries	292	35.01
7	Information Gateways	198	23.74

Purpose of using electronic information resources

Respondents were asked to mention their purpose of using electronic information resources. While 698 (83.69%) faculty members use electronic information resources for teaching, followed by 674 (80.82%) respondents use for research publications, 498 (59.71%) respondents use for general reading, about 418 (50.12%) respondents use for current awareness, whereas 406 (48.68%) respondents use for Consulting documents for Research &Development, 392 (47.00%) of faculties use for project work and very less 182 (21.82%) use for entertainment.

Table 2: Purpose for using Electronic Information Resources

Sl. No.	Purpose	No. of Respondents	Percentage (%)	Pearson Chi-Square		
				Value	df	Asymp. Sig. (2-sided)
1	For teaching purpose	698	83.69	2.806a	1	.094
2	For Research Publications	674	80.82	53.230[a]	3	.000
3	General reading	498	59.71	.010[a]	1	.919
4	Current Awareness	418	50.12	18.337[a]	3	.000
5	Consulting documents for Research & Development	406	48.68	.020[a]	1	.887
6	Project work	392	47.00	20.996[a]	3	.000
7	Entertainment	182	21.82	1.299[a]	1	.254

Importance of electronic information resources in meeting research needs of respondents

Data regarding importance of Electronic information resources in terms of meeting research needs is presented in table 3. The data reveals that 288 (34.53%) of the respondents opined that importance of OPAC is average and 312 (37.41%) respondents felt that CD/DVD-ROM is important, whereas 286 (34.29%) felt Online databases as important, about 312 (37.41%) opined that very important to Internet and 292 (35.01%) respondents felt very important to the E-Journals.

Table 3: Importance of electronic information resources in meeting research needs of respondents

Sl. No.	EIR's	Very important	Important	Average	Not important	Not important at all
1	OPAC	186 (22.30)	194 (23.26)	288 (34.53)	42 (5.04)	4 (0.48)
2	CD/DVD-ROM	90 (10.79)	312 (37.41)	190 (22.78)	66 (7.91)	10 (1.20)
3	Online databases	228 (27.34)	286 (34.29)	148 (17.75)	70 (8.39)	34 (4.08)
4	Internet	312 (37.41)	274 (32.85)	124 (14.87)	22 (2.64)	2 (0.24)
5	E-journals	292 (35.01)	236 (28.30)	152 (18.23)	32 (3.84)	20 (2.40)

Importance of electronic information resources in meeting teaching needs of respondents

The study presents the data on importance of Electronic information resources in terms of meeting teaching needs. It found that, 288 (34.53%) of the respondents opined use of OPAC is important and 350 (41.97%) respondents opined important to the CD/DVD-ROM, whereas 292 (35.01%) respondents felt important to the Online database, about 310 (37.17%) opined that internet asvery important and 268 (32.13%) respondents felt that E-Journals areimportant.

Table 4: Importance of electronic information resources in meeting teaching needs of respondents

Sl. No.	EIR's	Very important	Important	Average	Not important	Not important at all
1	OPAC	130 (15.59)	288 (34.53)	282 33.81)	24 (2.88)	10 (1.20)
2	CD/DVD-ROM	58 (6.95)	350 (41.97)	202 24.22)	56 (6.71)	20 (2.40)
3	Online databases	172 (20.62)	292 (35.01)	188 22.54)	34 (4.08)	4 (0.48)
4	Internet	310 (37.17)	244 (29.26)	140 16.79)	26 (3.12)	4 (0.48)
5	E-journals	258 (30.94)	268 (32.13)	140 16.79)	28 (3.36)	10 (1.20)

Skills for using electronic information resources

The table 5 clearly shows, that majority of the respondents i.e. 334 (40.05%) opined they learnt by trial and error, about 178 (21.34%) of the respondents opined they learnt by the guidance of library staff, followed by 166 (19.90%) respondents opined by the advice of friends. Very less respondents i.e. 28 (3.36%), 20(2.40%) and 22 (2.64%) learnt by external course, guidance from teachers and by attending course/training offered by the Institute respectively.

Table 5: Skills for using electronic information resources

Sl. No	Skill	No. of Respondents	%
1	By trial and error	334	40.05
2	With the guidance from library staff	178	21.34
3	By the advice of friends	166	19.90
4	By external course	28	3.36
5	Guidance from teachers	20	2.40
6	By attending course/training offered by the Institute	22	2.64

Use of bibliographical databases

The table 6 presents the result of how frequently respondents use the different types of bibliographic databases for teaching and research. 154 (18.47%) respondents use the Applied Science & Technology index plus as Weekly, about 148 (17.75%) respondents use Civil Engineering Database (CEDB) as weekly, followed by 110 (13.19%)respondents use occasionally to the EI Compendex, likewise, 102 (12.23%) respondents weekly useInspec and 96 (11.51%) occasionally use MathSciNet, about 108 (12.95%) weekly useSciFinder and 136 (16.31%) and 120 (14.39%) of the respondents fortnightly use Scopus and Web of Science respectively.

Table 6: Use of bibliographical databases by the respondents

Sl. No.	Database	Daily	Weekly	Fortnightly	Monthly	Occasionally	Mean	S. D.	CV
1	Applied Science & Technology index plus	88(10.55)	154(18.47)	144 (17.27)	66 (7.91)	78 (9.35)	2.80	1.28	45.65
2	Civil Engineering Database (CEDB)	84(10.07)	148(17.75)	76 (9.11)	30 (3.60)	108 (12.95)	2.84	1.45	50.99
3	EI Compendex	38 (4.56)	96(11.51)	64 (7.67)	66 (7.91)	110 (13.19)	3.30	1.39	42.02

4	Inspec	66 (7.91)	102 (12.23)	64 (7.67)	54 (6.47)	96 (11.51)	3.03	1.45	47.91
5	MathSciNet	32 (3.84)	94 (11.27)	68 (8.15)	68 (8.15)	96 (11.51)	3.28	1.34	40.92
6	SciFinder	38 (4.56)	108 (12.95)	74 (8.87)	70 (8.39)	70 (8.39)	3.07	1.30	42.36
7	Scopus	66 (7.91)	124 (14.87)	136(16.31)	70 (8.39)	90 (10.79)	2.99	1.30	43.47
8	Web of Science	38 (4.56)	110 (13.19)	120(14.39)	82 (9.83)	92 (11.03)	3.18	1.26	39.54

Figures in parenthesis indicate percentage

The respondents were asked about the use of bibliographical databases by the respondents. The mean value is agreeable (Mean = 3) for the databases *EI Compendex, Inspec, MathSciNet, SciFinder and Web of Science.* The respondents opinion given to use of *web of science* (CV = 46.40 %) is more stable, whereas most variable opinion of the respondents is received to *Civil Engineering Database (CEDB)* (CV = 50.99 %).

Use of full text databases for teaching/research by respondents

Respondents were asked to give their opinion on how frequently they use the full text databases for teaching/research. Among the different types of e-resources, 96 (11.51%) of the respondents occasionally use ABI Inform, about 116 (13.91%)and 122 (14.63%) respondents weekly use ACM Digital Library and ASABE Technical Library accordingly, followed by 108 (12.95%) respondents occasionally use ASA Digital Library about 108 (12.95%) weekly use ASCE Digital Library and 130 (15.59%) respondents weekly use ASME Digital Library. 216 (25.90%), 190 (22.78%), 142 (17.03%) and 136 (16.31%) respondents Weekly use Elsevier's Science Direct, Emerald Database, IEE Xplore and IET Digital Library respectively. Whereas 118 (14.15%) respondents fortnightly use SpringerLink and 120 (14.39%) respondents occasionally useInternational Society for Optics and Photonics (SPIE).

Table 7: Use offull text databases for teaching/research by respondents

Sl. No	Database	Daily	Weekly	Fortnightly	Monthly	Occasionally	Mean	S. D.	CV
1	ABI Inform	18 (2.16)	88 (10.55)	40 (4.80)	34 (4.08)	96 (11.51)	3.37	1.40	41.60
2	ACM Digital Library	66 (7.91)	116 (13.91)	66 (7.91)	46 (5.52)	96 (11.51)	2.97	1.44	48.51
3	ASABE Technical Library	62 (7.43)	122 (14.63)	70 (8.39)	50 (6.00)	106 (12.71)	3.04	1.44	47.25
4	ASA Digital Library	38 (4.56)	96 (11.51)	60 (7.19)	38 (4.56)	108 (12.95)	3.24	1.44	44.28
5	ASCE Digital Library	62 (7.43)	108 (12.95)	72 (8.63)	50 (6.00)	82(9.83)	2.95	1.40	47.49
6	ASME Digital Collection	82 (9.83)	130 (15.59)	98 (11.75)	44 (5.28)	90 (10.79)	2.84	1.39	48.76
7	Elsevier's Science Direct	96 (11.51)	216 (25.90)	120 (14.39)	62 (7.43)	54 (6.47)	2.57	1.19	46.38
8	Emerald Databases	46(5.52)	190 (22.78)	86 (10.31)	54 (6.47)	84 (10.07)	2.87	1.28	44.73
9	IEEE Xplore	92(11.03)	142 (17.03)	108 (12.95)	58 (6.95)	54 (6.47)	2.65	1.27	47.87
10	IET Digital Library	40 (4.80)	136 (16.31)	94 (11.27)	56 (6.71)	86 (10.31)	3.03	1.30	42.95
11	SpringerLink	62 (7.43)	106 (12.71)	118 (14.15)	66 (7.91)	66 (7.91)	2.92	1.28	43.73
12	International Society for Optics and Photonics (SPIE)	24 (2.88)	66(7.91)	68 (8.15)	46 (5.52)	120 (14.39)	3.53	1.36	38.49

Figures in parenthesis indicate percentage

The respondents were asked about the use of full text databases for teaching/research by the respondents. The mean value is agreeable (Mean = 2) for the databases *ACM Digital Library, ASCE Digital Library, ASME Digital Collection, Elsevier's Science Direct, Emerald Databases, IEEE Xplore, SpringerLink and International Society for Optics and Photonics (SPIE).* The respondents opinion given to *International Society for Optics and Photonics (SPIE)* (CV = 38.49 %) is more stable, whereas most variable opinion of the respondents is received to *ASME Digital Collection* (CV = 48.76 %).

Problems faced by the respondents while using electronic information resources

It is found from the table 8 that, majority of the respondents i.e. 404 (48.44%) faces the problem of internet connectivity whereas 392(47%) faces Lack of information about how to use Electronic Information Resources, 350 (41.97%) as the major problemindicate AND, OR, NOT i.e. the problems of Boolean logic while using e-resources. 272 respondents faces lack of suitable personal computers. The 270 (32.37%) respondents also faces the field searching (title, author, year etc.) to find articles, 252 (30.22%) of the respondents face problems which downloading (copying your search results to a disk), 196 (23.50%) of the respondents face problems in identifying the key terms and 172 (20.62%) of the respondents face problems in searching subject headings to search for information. The study clearly shows that the faculty members are facing varieties of the problems at the time if using EIR's.

Table 8: Problems faced by the respondents while using electronic information resources

Sl. No.	Problem	Yes	No
1	Lack of availability of suitable personal computers	272 (32.61%)	562 (67.39%)
2	Internet connectivity	404 (48.44%)	430 (51.56%)
3	Lack of information about how to use Electronic Information Resources	392 (47.00%)	442 (53.00%)
4	Subject headings to search for information	172 (20.62%)	546 (64.47%)
5	Keywords (search term) to find information	196 (23.50%)	524 (62.83%)
6	Field searching (title, author, year) to find articles	270 (32.37%)	424 (50.84%)
7	AND, OR, NOT (Boolean logic) to combine terms	350 (41.97%)	354 (42.45%)

Competence of faculty in using different source of information

Table 9depicts the competence about use of electronic resources use as reported by the faculty members. Results are presented in table-9, 262 (31.41%) of the respondents replied that their competence in use of OPAC is average. 288 (34.53%) of respondents opined that they are competent in searching CD/DVD-ROM, 300 (35.97%) of the respondents are competent in searching online databases, 252 (30.22%) of the respondents are very competent in searching the Internet and 254 (30.46%) of the respondents are competent in searching E-journals.

Table 9: Competence of faculty using different source of information

Sl. No.	EIR's	Very competent	Competent	Average	Not competent	Not competen t at all
1	Using OPAC	146 (17.51)	210 (25.18)	262 (31.41)	42 (5.04)	14 (1.68)
2	Searching CD/DVD-ROM	72 (8.63)	288 (34.53)	222 (26.62)	62 (7.43)	10 (1.20)
3	Searching Online databases	140 (16.79)	300 (35.97)	154 (18.47)	58 (6.95)	2 (0.24)
4	Searching Internet	252 (30.22)	232 (27.82)	126 (15.11)	44 (5.28)	4 (0.48)
5	Searching E-journals	166 (19.90)	254 (30.46)	152 (18.23)	54 (6.47)	12 (1.44)

Training programmes for accessing and using the electronic information resources

Data regarding training programmes for accessing and using the electronic information resources is presented in table-10. It reveals that 144 (17.27%) opined that training on the use of OPAC was very good,followed by, 122 (14.63%) of the respondents felt that training on CD/DVD-ROM searching was good, 144 (17.27%) of the respondents felt very good onSearching Online databases, 146 (17.51%) of the respondents felt good onsearching internet, whereas 124 (14.87%) felt that training on searching E-journals was very good.

Table 10: Training programmes for accessing the Electronic information resources

Sl. No.	Trainings received for	Very Good	Good	Adequate	Poor	Very Poor
1	Using OPAC	144 (17.27)	102 (12.23)	46 (5.52)	43 (5.16)	23 (2.76)
2	Searching CD/DVD-ROM	86 (10.31)	122 (14.63)	34 (4.08)	65 (7.79)	20 (2.40)
3	Searching Online databases	144 (17.27)	70 (8.39)	54 (6.47)	31 (3.72)	16 (1.92)
4	Searching Internet	68 (8.15)	146 (17.51)	65 (7.79)	27 (3.24)	25 (3.00)
5	Searching E-journals	124 (14.87)	88 (10.55)	42 (5.04)	34 (4.08)	30 (3.60)

Impact of E-resources on research publications

The table- 11 shows that majority i.e. 376 (45.08%) respondents agree and they feel that number of research publications have increased by using electronic information resources and 158 (18.94%) respondents strongly agree with that, About 168 (20.14%) felt uncertain and 44 (5.28%) of the respondents opined they disagree and very less respondents i.e. 4 (0.48%) strongly disagree on number of research publications have increased by using electronic information resources.

Table 11: Impact of E-resources on research publications

Sl. No.	Factors	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree	Mean	S. D.	CV
1	Do you feel that number of research publications have increased by using Electronic Information Resources?	158 (18.94)	376 (45.08)	168 (20.14)	44 (5.28)	4 (0.48)	2.14	0.82	38.46

Impact of E-resources on teaching

Out of the total respondents majority 332 (39.81%) respondents agree and feel that, there is great improvement in teaching ability by using electronic information resources and 212 (25.42%) respondents strongly agree with that, About 180 (21.58%) felt uncertain and 20 (2.40%) of the respondents opined they disagree and very less respondents 2 (0.24%) strongly disagree that there is improvement in teaching after using EIR's.

Table 12: Impact of E-resources on teaching

Sl. No.	Factors	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree	Mean	S. D.	CV
1	Do you feel improvements in teaching ability by using Electronic Information Resources?	212 (25.42)	332 (39.81)	180 (21.58)	20 (2.40)	2 (0.24)	2.01	0.80	39.63

SUGGESTIONS AND RECOMMENDATIONS

Based on the findings of the study, the following suggestions and recommendations are given for the higher authorities.

- The majority of the faculty working in the engineering & technology institutes prefers Internet as their first source to look for the needed information. They also agree that it has a significant impact on their teaching and research. Hence, the engineering and technology institute libraries must come forward to make all efforts to upgrade the internet system in the Organisation to access Electronic Information Resources.

- The faculty members have indicated that they learnt about the information skills for accessing electronic information resources by trial and error and through friends. However, this results in respondents wasting their precious time and places them into avoidable efforts. Hence it is suggested that the LIS professionals working in the library should develop new information literacy programmes and organize periodically the training programmes which impart required skills to users in accessing the electronic information resources.
- The study reveals that there is some improvement in the quality of research / teaching and contribution of research papers. During the first part of the 21st century there is a fast increase in the number of electronic information resources and at the same time assured to be the most important sources of information for research and educational institutions. In view of this, there is a dire need to expand the profile of online resources available at these libraries. Publications of some societies or publishers are not yet covered. Hence, the authorities of the institutes are urged to allocate more finance on priority base towards this. Unless additional finance is provided, it is very difficult for libraries to obtain licenses for online resources.

CONCLUSION

The technological innovation in the engineering institutes' libraries has tremendously changed the waysin which library users find and use information today. The engineering institutes' libraries must employ the best practices to address the contradictions and to solve the problems caused by such rapid and accelerating technological integration. The electronic information resources have become the convenient form of accessing the required information in almost all the major operational areas. They save time, remove geographical barriers and the technical and managerial information can be transmitted quickly. Their timely implementation would help improve the output of the Engineering institutes.

The present study examines the impact of electronic information resources which have a positive impact on the teaching and research of faculty members of engineering and technology institutes. The future of the library and information services at the engineering and technology institute libraries depends upon major factors like the availability of manpower in an adequate proportion, which continuously keeps updating its IT skills and the determination of the higher authorities in allocating appropriate recurring grants to procure, update and maintain the IT infrastructure in general and the electronic information resources in particular.

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