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Information and Communication Technology Facilities and Services Among Engineering College Libraries in Rayalaseema Region of Andhra Pradesh

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ABSTRACT

This article presents information on various ICT facilities and services provided in engineering institutions at Rayalaseema Region of Andhra Pradesh. It addresses current status of institutions providing library services such as traditional, electronic, and document delivery services and facilities like hardware, software and communication resources. Eighty-one completed responses collected with a total response rate of 88.04 %. ANOVA (Analysis of Variance) test was conducted to find out the significance of the variables constituting hardware, software facilities, and communication services versus institutions, respectively. The study showed that 87.65 % library provided with windows XP and 72.84 % Pentium IV workstation. DELNET seems to be the most preferred information network service and VSAT is found to be mostly used communication service. About 60 % libraries are partially automated and barcode technique is most frequently opted for circulation. It is concluded from that automation is still an ongoing process in libraries of Rayalaseem Region.

Keywords: Facilities, services, engineering colleges, ICT resources, hardware, software

1. INTRODUCTION

The use of information and communication technology (ICT)[1] in libraries includes the growing importance of delivery of digital contents and management of electronic resources, integration of database system with the web environment, and managing information system of parent organisation. The success of any library depends not only on having qualified personnel but also on the interaction among them. According to Lesikar[2] communication is the component that build organisation prospective. To achieve its objectives, libraries must have efficient communication systems. Emuakpor[3] describe information technology as all resource of technology decisive to the processing, preserving and transmitting information in electronic form and the resources include computers, communication equipment and networks, fax machines and electronic, pocket calculator. Provision of multiple library facilities[4] can have a strong impact on institutional outcomes. There are studies done throughout India on library services and facilities. Focusing on Rayalaseema region of Andhra Pradesh, Kumar[5,6] had made an extensive research on digital collection and development initiatives in engineering college libraries where he had provided opinion of librarians on various digital resources acquainted in library. An analytical survey conducted on digital preservation techniques in engineering institutions of Rayalseema Region where the author had examined various preservation technique opted by librarians in their respective institutions. The author also gives information on best-supported operating system for preserving digital materials. The article attempts to provide information on various library services such as traditional, document delivery service and electronic service and provides information on ICT resource availability in engineering colleges.

2. LITERATURE REVIEW

Singh, *et al.,*[7] aims to study the position of university libraries with regard to resources, services staff and library automation activities. Similar studies are conducted by Mohindra, *et al*[8] on user satisfaction on quality of library services at A.C.Joshi library, Panjab University. The authors reported that library environment and library services have impact on users' satisfaction. Various statistical analyses such as T-test, F-test, and multiple regression analysis tests conducted to find out difference in library attributes and satisfaction and the paper report that there exists significant difference in levels of library attributes. Tanuskodi[9] has made a user survey on assessing the efficiency of library services of district central libraries in Tamilnadu. He had reported that libraries are lagging behind in providing user-

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specific information, and has given certain valuable suggestion to improve library services. Singh, *et al*[10] made a study to provide present status and constraints incurred on use of information and communication technology application centres at Noida. The authors report that most of the library information centers have basic hardware facility, but the amenities hardly operated due to lack of awareness of LIS professionals on use and operations of hardware. Sarwesh[11] provides comprehensive information about services and information resources on websites of libraries in Rajasthan. The author states that information provided in library websites has more variability, the authors point out disinterest from management and administration, lack of co-operation from library staff may be some of the reasons for variability in website information.

3. OBJECTIVES

The present study is undertaken to outline the facilities and services provided by engineering colleges in Rayalaseema Region of Andhra Pradesh. The objectives are to know about:

(a) Library services—Traditional, electronic and document delivery services, and availability of library website service

(b) Type of library facilities—Hardware facilities including server, workstation, and other hardware utilities; software facilities such as types of operating system and its application, web browser and e-mail clients.

(c) Library network services offered by the institutions.

(d) Types of automation software used and circulation system implemented in the library.

3.1 Hypotheses

(a) There is no significant difference in the availability of hardware facilities among various engineering institutions in Rayalaseema Region of Andhra Pradesh.

(b) There is no significant difference in the software resources accessibility in engineering institutions.

(c) There is no significant difference in the use of communication services in engineering institutions.

(d) There is no significant difference in the availability of information network services in engineering institutions.

4. METHODOLOGY

There are 99 Engineering institutions in Rayalaseema Region of Andhra Pradesh. Previously, a pilot study conducted to survey number of engineering college in Rayalaseema Region of Andhra Pradesh and the study reported that colleges established after 2010 lack infrastructure facility in library, hence those college were eliminated from the study and questionnaire were distributed to respective librarians of institutions established up to 2010 only. Stratified random sampling followed to collect primary data from the engineering college[12] libraries. Out of 92 questionnaires distributed, 83 to private engineering colleges, 6 to Government engineering colleges, and 3 Minority government colleges, 81 completely filled valid feedback received. Therefore, the data for 81 questionnaires taken for the study. A majority of the respondents 72 (88.89 %) belongs to Private Engineering institutions, about 3 (3.70 %) responses belong to Minority Engineering institutions, and 6 (7.41 %) belong to Government institution.

5. ANALYSIS AND INTERPRETATION

Statistical Package for the Social Science (SPSS) was used for the analysis of data. Statistical analysis techniques such as frequency distribution, percentage analysis, and one ways - ANOVA tests employed.

5.1 Library Services

Generally, a modern library provides three major types of services such as traditional services, document delivery service, and electronic services. Librarians were asked regarding various services offered in library and their responses presented in Table 1.

The nature and types of services provided by the libraries of engineering college shown in Table 1. It is observed that the all the libraries under the survey offer 'circulation service' followed by 81.48 % libraries offer 'internet service' and 79.01 % 'reservation service. It is observed that reservation service (79.01 %) as third rank, 'reprography' (76.54 %) as 4th rank, 'electronic journals' as 5th rank, and 'reference service' as 6th rank. This reveals that the engineering educational institution libraries are marching towards the provision of electronic service and leading to setup digital libraries. Library and information science professionals queried regarding availability of library website services in their college website and their responses denoted in Table 2. It could be observed that most of the library websites (97.53 %) offer information about library opening hours, while 85.19 % provides information about OPAC accession and 71.60 % provide links to digital library resources, 48.15 % websites offer study materials for library skills development and 45.68 % afford documentation and support materials for using library resources.

The respondents were asked to mention the availability/accessibility of a separate website or blog for their library apart from the college website; their response is given in Table 3.

Table 1. Types of institutions v/s services offered by the libraries

S. No.	Services offered by the libraries	Types of institutions			Total n=81	Rank
		Govt.	Minority	Private		
1.	**Traditional service**					
	Circulation	6 (7.41)	3 (3.70)	72 (88.89)	81 (100.00)	1
	Reservation	3 (3.70)	3 (3.70)	58 (71.60)	64 (79.01)	3
	Inter library loan	2 (2.47)	0	17 (20.99)	19 (23.46)	11
	Supply of documents/articles	3 (3.70)	1 (1.23)	17 (20.99)	21 (25.93)	10
	Reference service	4 (4.94)	3 (3.70)	37 (45.68)	44 (54.32)	6
2.	**Document delivery service**					
	Abstracting	2 (2.47)	1 (1.23)	14 (17.28)	17 (20.99)	13
	Indexing	2 (2.47)	0	16 (19.75)	18 (22.22)	12
	Bibliography	2 (2.47)	1 (1.23)	19 (23.46)	22 (27.16)	9
	Current awareness services	4 (4.94)	1 (1.23)	26 (32.10)	31 (38.27)	8
	Selective dissemination of information	3 (3.70)	0	16 (19.75)	19 (23.46)	11
	Reprography	4 (4.94)	3 (3.70)	55 (67.90)	62 (76.54)	4
3.	**Electronic services**					
	CD-ROM searches	5 (6.17)	2 (2.47)	35 (43.21)	42 (51.85)	7
	Internet	4 (4.94)	3 (3.70)	59 (72.84)	66 (81.48)	2
	Online database services	3 (3.70)	0	13 (16.05)	16 (19.75)	14
	Fax	0	0	16 (19.75)	16 (19.75)	14
	Electronic journals	5 (6.17)	2 (2.47)	54 (66.67)	61 (75.31)	5

Table 2. Types of institutions v/s library website availability services

S. No.	Library website availability of services	Type of institutions			Total (%)
		Govt. (%)	Minority (%)	Private (%)	
1.	Library opening hours	5 (6.17)	3 (3.70)	71 (87.65)	79 (97.53)
2.	Access the library opac	5 (6.17)	2 (2.47)	62 (76.54)	69 (85.19)
3.	Links to digital library resource (database & e-journals, etc)	4 (4.94)	1 (1.23)	53 (65.43)	58 (71.60)
4.	Documentation and support materials for using library resources	4 (4.94)	1 (1.23)	32 (39.51)	37 (45.68)
5.	Self-help and study materials for library skills development	4 (4.94)	1 (1.23)	34 (41.98)	39 (48.15)
6.	Events and announcement	5 (6.17)	3 (3.70)	30 (37.04)	38 (46.91)
7.	None of the above	4 (4.94)	0	6 (7.41)	10 (12.35)

Table 3. Types of institutions vs distinct library website/ blog

S. No.	Distinct library own website/ blog	Types of institutions			Total (%)
		Govt. (%)	Minority (%)	Private (%)	
1.	Yes	1 (1.23)	0	2 (2.47)	3 (3.70)
2.	No	5 (6.17)	3 (3.70)	70 (86.42)	78 (96.30)
Total		**6 (7.41)**	**3 (3.70)**	**72 (88.89)**	**81(100)**

It may be noticed that majority of institutions (96.30 %) do not have a separate library website, meaning the library details are provided in the college website itself while 3.70 % have their own library website/blog.

5.2 ICT Facilities for Libraries

Table 4 provides information about hardware resources availability in various institutions. With regard to servers, most of institutions 29 (35.80 %) possess rack server 59 (72.84 %), institutions are equipped with Pentium IV processor and printer's have 69 (85.19 %).

5.3 Hypothesis Testing

F-Test Analysis of Variance (ANOVA) is a parametric test to investigate the difference in measured values of a characteristic among three

Table 4. Types of institutions v/s ICT's resource availability–hardware

S. No.	ICT's resource availability–hardware	Type of institution			Total
		Govt.	Minority	Private	
1.	**Server**				
	Rack server	4 (4.94)	1 (1.23)	24 (29.63)	29 (35.80)
	Tower server	0	0	4 (4.94)	4 (4.94)
	Blade server	0	0	1 (1.23)	1 (1.23)
	Server enclosure server	0	0	1 (1.23)	1 (1.23)
2.	**Workstation**				
	Pentium IV	6 (7.41)	2 (2.47)	51 (62.96)	59 (72.84)
	Workstation-dual core	2 (2.47)	1 (1.23)	23 (28.40)	26 (32.10)
	Workstation-core2duo	0	1 (1.23)	10 (12.35)	11 (13.58)
	Amd Athlon	2 (2.47)	0	5 (6.17)	7 (8.64)
3.	**Other hardware facilities**				
	Portable hard disk	3 (3.70)	1 (1.23)	22 (27.16)	26 (32.10)
	Laptops	3 (3.70)	0	25 (30.86)	28 (34.57)
	Palmtop	0	0	2 (2.47)	2 (2.47)
	Scanner (for converting print form to digital form)	5 (6.17)	1 (1.23)	27 (33.33)	33 (40.74)
	Printer	5 (6.17)	3 (3.70)	61 (75.31)	69 (85.19)
	Modem	5 (6.17)	2 (2.47)	49 (60.49)	56 (69.14)
	Web camera	3 (3.70)	0	18 (22.22)	21 (25.93)
	Closed circuit camera	3 (3.70)	0	13 (16.05)	16 (19.75)
	UPS	5 (6.17)	2 (2.47)	68 (83.95)	75 (92.59)
	LCD projector	1 (1.23)	0	11 (13.58)	12 (14.81)

or more independent groups. ANOVA[13] is used to compare variables between different groups. F-test is used to find the difference in various library facilities such as hardware, software, communication, and library network services between various institutions under study. Testing was conducted at ($p<0.05$) level of significance.

Hypothesis 1—There is no significant difference in the availability of hardware facilities among various engineering institutions in Andhra Pradesh.

Table 5 reveals the analysis of variance (ANOVA) of library hardware components between various institutions under study. The F-calculated value obtained for server and workstation are 1.5 and 3.91 respectively, which is less than the F-critical value of 4.26, hence, the null hypothesis is accepted. However, for other hardware facilities the F-calculated value of 15.28 greater than the F-critical value of 3.35. It is understood that there exists no significant different among various engineering institutions with regard to server and workstation facilities. Hence, significant difference seem to be present on other hardware facilities among the institutions. Regarding software availability in various institutions, data is presented in Table 6. About 87 % Institutions have Windows XP, 40.74 % institutions have Windows 7 while 25.93 % organisations are provided with Windows 95/98.

Focusing onto software applications, 74.07% institution have MS-Office 2003 application, regarding web browser, 97.53 % institutions are provided with Internet Explorer and 34.57 % with Google Chrome. 98.77 % are provided with Outlook and 14.81 % with Eudora, and 95.06 % possess pdf format.

Hypothesis 2—There is no significant difference in the software resources accessibility in engineering institutions under study.

Table 7 reveals the results of ANOVA test conducted to find difference in software components across institutions. For the parameters, operating system, the F-calculated value obtained was 9.51, which is greater than the F-critical value of 3.35; for portable document format (pdf), the attained F-calculated value was 9.31, which is greater than the F-critical value of 4.26. This implies that there is significant variation between software components accessed in various engineering institutions under study.

There is no difference among software applications, web browsers, and e-mail clients between the institutions since the F-values are less than the

Table 5. ANOVA–ICT's facilities–hardware vs institutions

S. No.	Hardware	Type of institution	N	Mean	SD	df	F-value	F-crit	P-value
1.	Server (model)	Govt.	6 (7.41)	1	2	2	1.5	4.26	0.274016
		Minority	3 (3.70)	0.25	0.5				
		Private	72 (88.89)	7.5	11.090				
2.	Workstation	Govt.	6 (7.41)	2.5	2.516	2	3.91	4.26	0.059962
		Minority	3 (3.70)	1	0.816				
		Private	72 (88.89)	22.5	20.613				
3.	Other hardware facilities	Govt.	6 (7.41)	3.3	1.767	2	15.28	3.35	<.0001
		Minority	3 (3.70)	0.9	1.100				
		Private	72 (88.89)	29.6	22.212				

Table 6. Types of institutions vs ICT's resource availability–software

S. No.	ICT's resource availability–software	Type of institution			Total
		Government	Minority	Private	
1.	**Operating systems**				
	Windows XP	4 (4.94)	1 (1.23)	66 (81.48)	71 (87.65)
	Windows 2000	3 (3.70)	1 (1.23)	12 (14.81)	16 (19.75)
	Windows 2003	2 (2.47)	1 (1.23)	16 (19.75)	19 (23.46)
	Windows 95/98	0	0	21 (25.93)	21 (25.93)
	Windows7	4 (4.94)	1 (1.23)	28 (34.57)	33 (40.74)
	Windows vista	0	0	5 (6.17)	5 (6.17)
	Sun solaris	2 (2.47)	0	9 (11.11)	11 (13.58)
	Linux	1 (1.23)	0	16 (19.75)	17 (20.99)
	Mac OS	0	0	13 (16.05)	13 (16.05)
	Windows millennium	0	0	2 (2.47)	2 (2.47)
2.	**Software applications**				
	Ms-Office 2003	5 (6.17)	2 (2.47)	53 (65.43)	60 (74.07)
	Ms-Office 2007	5 (6.17)	1 (1.23)	44 (54.32)	50 (61.73)
	Word Perfect office application	0	0	6 (7.41)	6 (7.41)
	Lotus smart suite	0	0	2 (2.47)	2 (2.47)
3.	**Web browser**				
	Internet Explore	6 (7.41)	3 (3.70)	70 (86.42)	79 (97.53)
	Mozilla Firefox	5 (6.17)	1 (1.23)	21 (25.93)	27 (33.33)
	Google Chrome	4 (4.94)	0	24 (29.63)	28 (34.57)
	Netscape	2 (2.47)	0	5 (6.17)	7(8.64)
	Opera	0	0	3 (3.70)	3 (3.70)
4.	**E-mail clients**				
	Out look	6 (7.41)	3 (3.70)	71 (87.65)	80 (98.77)
	Eudora	2 (2.47)	0	10 (12.35)	12 (14.81)
	Pegasus Mail	0	0	2 (2.47)	2 (2.47)
5.	**Pdf (adobe acrobat reader)**	6 (7.41)	2 (2.47)	69 (85.18)	77 (95.06)

F-critical values, the null hypothesis accepted for these parameters.

Table 8 presents data about various communication services available in libraries of respective institution. It is observed that 81.48 %have shared internet server and 17.28 % libraries provided with Dial-up mode and leased line for obtaining library internet connection, while 62.96 % libraries use broadband connection.

Hypothesis 3—There is no significant difference in the use of communication services in engineering institutions.

Table 9 presents variability is communication services between institutions through ANOVA test. It is found that there is no significant disparity concerning internet server used across institutions since the F-value obtained was 1.61, which is less than the F-critical value of 5.14. Hence, the

Table 7. ANOVA–ICT's resource availability–software vs institutions

S. No.	Software	Type of institution	N	Mean	SD	df	F-value	F-crit	P-value
		Govt.	6 (7.41)	1.6	1.646				
1.	Operating systems	Minority	3 (3.70)	0.4	0.516	2	**9.51**	3.35	0.000748
		Private	72 (88.89)	18.8	18.201				
		Govt.	6 (7.41)	2.5	2.886				
2.	Software applications	Minority	3 (3.70)	0.75	0.957	2	3.55	4.26	0.073009
		Private	72 (88.89)	26.25	26.004				
		Govt.	6 (7.41)	3.4	2.408				
3.	Web browser	Minority	3 (3.70)	0.8	1.303	2	3.46	3.89	0.065097
		Private	72 (88.89)	24.6	27.042				
		Govt.	6 (7.41)	2.66	3.055				
4.	E-mail clients	Minority	3 (3.70)	1	1.732	2	1.4	5.14	0.316961
		Private	72 (88.89)	27.66	37.740				
		Govt.	6 (7.41)	6	1.231				
5.	Pdf (adobe acrobat reader)	Minority	3 (3.70)	2	0.012	2	**10.31**	4.26	1.000000
		Private	72 (88.89)	69	1.543				

Table 8. Types of institutions vs communication services

S. No.	Communication services in libraries	Type of institution			Total
		Govt.	Minority	Private	
1.	**Internet server**				
	Its own internet server	0	0	3 (3.70)	3 (3.70)
	Shared internet server	6 (7.41)	1 (1.23)	59 (72.84)	66 (81.48)
	Internet service provider	0	2 (2.47)	10 (12.35)	12 (14.81)
2.	**Library internet connection**				
	Dial-up	0	0	14 (17.28)	14 (17.28)
	ISDN	0	0	0	1 (1.23)
	Leased line	0	0	14 (17.28)	14 (17.28)
	Digital subscriber line	0	0	1 (1.23)	1 (1.23)
	Vsat	0	0	4 (4.94)	4 (4.94)
	Wireless	0	1 (1.23)	2 (2.47)	3 (3.70)
	Broadband	3 (3.70)	2 (2.47)	46 (56.79)	51 (62.96)
	Data card	3 (3.70)	0	16 (19.75)	19 (23.46)
	Virtual private network	2 (2.47)	0	5 (6.17)	7 (8.64)

Table 9. ANOVA–ICT's resource availability–communication service vs institutions

S. No.	Communication service	Type of institution	N (%)	Mean	SD	Df	F-value	F-crit	P-value
1.	Internet server	Govt.	6 (7.41)	2	3.464				
		Minority	3 (3.70)	1	1	2	1.61	5.14	0.275588
		Private	72 (88.89)	24	30.512				
2.	Library internet connection	Govt.	6 (7.41)	0.88	1.364				
		Minority	3 (3.70)	0.33	0.707	2	4.96	3.40	0.015742
		Private	72 (88.89)	11.33	14.378				

Significance at p < 0.05 alpha level

null hypothesis is accepted. Focusing on to library internet connection, the calculated F-value of 4.96 is found to be greater than the F-critical value 3.40. It indicates that there exists significant different among various engineering institutions. Hence, the null hypothesis is rejected in this regard.

Table 10 provides information about network service availability in various institutions. DELNET gains 1st rank with 71.60 % while INFLIBNET obtains 2nd rank (13.58 %) ERNET stays in 3rd position (12.35 %).

Hypothesis 4—There is no significant difference in the availability of information network services in engineering institutions.

Variability in information network services between institutions provided is shown in Table 11. There is no significant difference between information network service offered between institutions and the F-calculated value is 2.13, which is less than the F-critical value of 3.35. Hence, the null hypothesis is accepted. In developing digital library services, the first and foremost requirement is the library automation services. Therefore, the respondents asked to state the extent of library automation, carried out in their libraries.

Table 12 reveals that most of the libraries (59.26 %) are partially automated and 20.99 % are completely automated while 19.75 % follow manual procedure. From the analysis, it is inferred that:

(a) Automation is an ongoing process among the libraries under study.

Table 12. Types of institutions vs library automation

S. No.	Information network services	Type of institution			Total (%)
		Govt. (%)	Minority (%)	Private (%)	
1.	Completely automated	2 (2.47)	1 (1.23)	14 (17.28)	17 (20.99)
2.	Partially automated	1 (1.23)	2 (2.47)	45 (55.56)	48 (59.26)
3.	Manual library	3 (3.70)	0	13 (16.05)	16 (19.75)

(b) The use of own preparation software is also observed which reveals that these libraries require sufficient finances to prepare own software stuffs.

(c) Most of the libraries, either fully automated or partially automated, are paving the way for digital library initiatives.

6. CONCLUSIONS

The organisation of information/knowledge is an essential preliminary to its effective exploitation and dissemination. As the quantity of knowledge expands, the need to organise it becomes more pressing. A vast number of different means of organising information devised and exploited since the earliest times. With the vast output of new information and ever-increasing degree of specialisation in all areas of human knowledge, heavy demands are being placed on library information storage and retrieval systems, which can be scarcely met by the

Table 10. Types of institutions vs information network services availability

S. No.	Information network services	Type of institution			Total (%)	Rank
		Govt. (%)	Minority (%)	Private (%)		
1.	NICNET	0	0	1 (1.23)	1 (1.23)	5
2.	CALIBNET	0	0	2 (2.47)	2 (2.47)	4
3.	DELNET	6 (7.41)	0	52 (64.20)	58 (71.60)	1
4.	ADINET	0	0	1 (1.23)	1 (1.23)	5
5.	DESINET	0	0	1 (1.23)	1 (1.23)	5
6.	ERNET	2 (2.47)	0	8 (9.88)	10 (12.35)	3
7.	SIRNET	0	0	1 (1.23)	1 (1.23)	5
8.	VIDYANET	0	0	2 (2.47)	2 (2.47)	4
9.	INFLIBNET	2 (2.47)	0	9 (11.11)	11 (13.58)	2
10.	Others	0	0	1 (1.23)	1(1.23)	5

Table 11. ANOVA–ICT's resource availability–information network service vs institutions

S. No.	Information network	Type of institution	N	Mean	SD	Df	F-value	F-crit	P-value
1.	Information network	Govt.	6 (7.41)	1	1.943	2	2.13	3.25	0.138376
		Minority	3 (3.70)	0	0				
		Private	72 (88.89)	7.8	15.824				

(Figures in Parentheses indicate percentage); Significance at p < 0.05 alpha level

traditional methods except with the use of IT devices. The improvements and changes in computing and telecommunications and the integration of the two fields have had a huge role to play in the methods of information processing and dissemination in academic libraries; thus improving the quality of use to which such libraries are put.

REFERENCES

1. Tiwari, Braj Kishor & Sahoo, K.C. Infrastructure and use of ICT in university libraries of Madhya Pradesh: Librarians' views. *Inter. J. of Inf. Diss. and Tech.,* 2011, **1**(4), 232-40.
2. Lesikar, R.V.; Pettit, J.D. & Darsey, N.S. Communication in business. Longman London, 1999.
3. Emuakpor, A.O.S. The impact of information technology in collection development and management in libraries. *Inf. Sci. & Tech. for Lib. Schools in Africa, edited by* Madu, E.C. & *et al.,* Evi-Coleman Publications, Ibadan, 2002.
4. Rao, Srinavasa. Correlation among library facilities: An analytical study. *Lib. Phil. and Prac. (e-journal)*, Paper 668, 2011. http://digitalcommons.unl.edu/libphilprac/668.
5. Kumar, K. Analytical survey on digital preservation and techniques among engineering education institutional libraries in Rayalaseema Region of Andhra Pradesh. *Lib. Phil. and Prac. (e-journal),* Paper 1045, 2014. http://digitalcommons.unl.edu/libphilprac/1045.
6. Kumar, K. *Inter. J. of Know. Con. Dev. & Tech.,* 2014 **4**(1), 521. DOI: http://dx.doi.org/10.5865/IJKCT.(2014).4.1.005.
7. Singh, Mehar & Arora, Ajay Kumar. Library resources and services in the selected university libraries of Haryana, India. *DESIDOC J. of Lib. & Inf. Tech.,* 2015*,* **35**(1), 47-53. DOI: 10.14429/djlit.35.1.7967.
8. Mohindra, Rakesh & Anil Kumar. User satisfaction regarding quality of library services of A.C. Joshi Library, Panjab University, Chandigarh *DESIDOC J. of Lib. & Inf. Tech.,*2015*,* **35**(1), 54-60. DOI: .10.14429/djlit.35.1.8072.
9. Thanuskodi, S. Assessing the efficacy of library service of district central libraries in Tamil Nadu from users perception. *DESIDOC J. of Lib. & Inf. Tech.,* 2012*,* **32**(6), 485-92.
10. Singh, K.P.; Sharma, Neeru & Neg, Nandi. Availability, use and barriers to ICT in the R&D institutions: A case study of the libraries and information centres in Noida. *DESIDOC J. of Lib. & Inf. Tech.,* 2009, **29**(6), 21-31.
11. Sarwesh, Pareek & Gupta, Dinesh, K. Information about services and information resources on websites of selected libraries in Rajasthan: A study. *DESIDOC J. of Lib. & Inf. Tech.* 2012, **32**(6), 499-508.
12. EAMCET. Admission into Engineering & Pharmacy colleges information and instructions booklet, Andhra Pradesh.
13. ANOVA. http://www.csse.monash.edu.au/~smarkham/resources/anova.htm.

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