USE OF ICT FOR ACADEMIC ACTIVITIES BY ENGINEERING FACULTY MEMBERS: A STUDY AT SELECTED ENGINEERING COLLEGES IN RAYALASEEMA REGION, ANDHRA PRADESH, INDIA

A. Sivakesavulu[1] and K. Padmini[2]

[1]Research Scholar, Dept.of. Library and Information Science, Sri Venkateswara University, Tirupati, A.P.
[2]Professor , Department of Library and Information Science, Sri Venkateswara University, Tirupati, A.P.

Abstract:-ICT is the main means of rapid change in today's Information society. Especially engineering education, is not an exemption to this. The engineering faculty needs to cope up with the same trend. In view of that, present study has been taken up dealing with ICT, its role and advantages in education. This study also focuses on the usage of ICT services, advantages and disadvantages in engineering colleges. Also discusses the purpose of using ICT by the members of engineering faculty.

Keywords: Information and Communication Technology (ICT), Education, Teaching, Research, Extension activities, Search engines.

1.INTRODUCTION

Application of Information and Communication Technology (ICT) in libraries has become inevitable in the present era of information explosion and wide spread use of digital information resources. Libraries are the back bone of any institution which help in the advancement of research and development activities. All the users require latest and relevant information to keep themselves abreast of new developments in their respective areas of interest. The libraries are switching over to ICT based resources and services at an accelerated pace. E – Journals, e- Books, CD-ROM databases, online databases, web based resources and a variety of other electronic resources are fast replacing the traditional resources of libraries. It is the right time to evaluate the existing application of ICT facilities in research libraries in a region, particularly in developing countries like India which is characterized as the hub of the ICT activities and developments as well as the centre of the institutions / organizations in India. The present analytical study is expected to provide fundamental understanding on the current status of ICT applications and it would also prove that it is quite useful for suitable modifications or improvements of the existing academic libraries, especially engineering college libraries.

1.1 Information and Communication Technology (ICT)

ICT stands for Information and Communication Technology and is defined, as a "diverse set of technological tools and resources used to communicate, and to create, disseminate, store, and manage information."
"ICT implies the technology which consists of electronic devices and associated human interactive materials that enable the user to employ them for a wide range of teaching - learning processes in addition to personal use."
"Information and Communication Technology (ICT) in education is the processing of information and its communications facilities and features that variously support teaching, learning and a range of activities in education1".

1.2 Information and Communication Technology in education

Information and Communication Technologies (ICTs) — which include radio and television, as well as new digital technologies such as computers and the Internet — have been proven as potentially powerful tools for educational change and reform. When used appropriately, different ICTs can help expand access to education, strengthen the relevance of education to the increasingly digital workplace, and raise educational quality make teaching and learning into an active process connected to real life. In recent years there has been a groundswell of interest in how computers and the internet can best be harnessed to improve the efficiency and effectiveness of education at all levels and in both formal and non-formal settings. For developing countries ICTs have the potential for increasing access and improving the relevance and quality of education. It thus represents a potentially equalizing strategy for developing countries. Teachers and learners no longer have to rely solely on printed books and other materials in physical media housed in libraries (and available in limited quantities) for their educational needs. With the interest and the world wide Web, a wealth of learning materials in almost every subject and in a variety of media can now be accessed from anywhere at any time of the day and by an unlimited number of people. This is particularly significant for many universities in developing countries, and even some in developed countries, that have limited and outdated library resources. ICTs also facilitate access to resource persons- mentors, experts, researchers, professionals, business leaders, and peers-all over the world.

1.3 Advantages of ICT in education

❖ Quick access to information;
❖ Easy availability of updated data;
❖ Connecting geographically dispersed regions;
❖ Catering to the Individual differences;
❖ Wider range of communication media; and
❖ Wider learning opportunities to students and faculty members2.

2.REVIEW OF LITERATURE

Kirkup and Kirkwood (2005)3 opined that the widespread adoption of information and communications technologies (ICT) in higher education (HE) since the mid 1990s has failed to produce the radical changes in learning and teaching than many anticipated. They investigated how HE teachers in one large distance learning university have, over time, appropriated ICT applications as teaching tools, and the gradual rather than revolutionary changes that have resulted. They suggested that whether or not these later innovations will ever be adopted by the majority of HE teachers depends both on how well they function as tools within the teaching activity system, and whether they offer an improvement on the existing tools in the system.

Odufuwa (2006)4 asserted that advances in ICT have progressively reduced the cost of managing information. It is enabling individuals and organizations to undertake information related tasks much more efficiently. Such advances have equally introduced innovations in products, processes and organization structures.

Demirarslan and Usluel (2006)5 reported in their study that for an effective information and technology integration into the teaching learning process, teachers are in use of sufficient equipment and software and access to ICT sources as well as are in need of the support of the administrator.

Sudharani (2007)6 conducted a research study on "Internet as an Information source: A survey of engineering students in Nellore district". The findings of the study indicated that most of the female respondents (77.6%) mentioned that they use yahoo search engine followed by Google (16.9%). The study also observed that majority of the male and female respondents have registered their e-mail addresses in yahoo.

Kaino (2007)7 analyzed that the contribution of ICTs in achieving the goals and the participation of higher learning institutions in particular could not be over emphasized as a number of ICT projects were carried out by these institutions. The significance of ICTs is realized in many aspects such as improved access to learning by all, creation of conducive learning environment by gender, quality of knowledge delivery, expanded secondary and post secondary education, reduction of expenditure on training and many others. This is to the advantage of advances in Information Technology (IT) that have changed ways of communication in education and delivery of knowledge to society.

Vandana and Kishor (2013)8 conducted a case study to know the use of Internet in engineering colleges of Udaipur, Rajasthan. The study found out that 92.85% of the total respondents use Internet only for e-mail. 85.71% respondents use Google as the favorite search engine for accessing information.

3.METHODOLOGY

The methodology adopted is the questionnaire based survey method for data collection. The total

population for the four branches (CSE, ECE, EEE and ME) is 1920 (100%) which represents faculty of selected engineering colleges in Rayalaseema region, A. P.

3.1 Sampling method

Among the total population 1,920, through simple random sampling method 1200 (62.5%) units were selected and questionnaires were distributed to these selected units. The response was 1008 (84%).

3.2 Scope of the study

The present study is mainly focused on using of ICT services, advantages and disadvantages of ICT, in engineering colleges in Rayalaseema Region. There are 101 engineering colleges in Rayalaseema Region. The colleges which were established before 2007 were selected (28 engineering colleges) for the present study.

4.OBJECTIVES

The study confined itself to the objectives appended below:

- ❖ To know the purpose of using ICT by faculty members
- ❖ To study the different search engines used for teaching, research and extension activities by faculty members
- ❖ To examine the advantages and disadvantages of ICT in teaching and research
- ❖ To suggest remedial measures to the authorities for solving problems if any and improving usage of ICT services by the faculty members in engineering colleges

5.ANALYSIS OF DATA

In this paper, data collected from respondents are analyzed by using simple percentile and Chi-square tests. Basing on that, inferences are made and conclusions are drawn.

Table 1
Distribution of Respondents according to their designation

Designation	Respondents	
	In number	In Percentage
Assistant Professor	787	78.07
Associate Professor	191	18.94
Professor	30	2.97
Total	1008	100.00

It is evident from Table 1 that out of the total respondents selected for the sample, 78.07 percent is Assistant professors, 18.94 percent is Associate professors and the remaining 2.97 percent is professors. This is due to the reason that, to become professor, required number of years of experience is necessary and many of the engineering colleges under study are existing since less than 15 years. In the colleges established earlier, many professor posts are vacant.

It can be concluded that most of the respondents are Assistant Professors.

Table 2
Distribution of Respondents according to their gender

Gender	Respondents	
	In number	In Percentage
Male	660	65.47
Female	348	34.53
Total	1008	100.00

It is evident from Table 2 that out of the total respondents selected for the sample, 65.47 percent is male faculty and the remaining 34.53 percent is female faculty. A reservation of 33% to females in education and employment is prevailing in India. The results in Table 2 satisfies that privilege.

It can be concluded that most of the respondents are male faculty.

Table 3
Purpose of Using ICT - Designation wise

Purpose	Asst. Professor n=787			Assoc. Professor n=191			Professor n=30		
Ranking	1	2	3	1	2	3	1	2	3
Teaching	576 (73.18)	120 (15.24)	91 (11.56)	110 (57.60)	59 (30.89)	22 (11.51)	18 (60.00)	10 (32.25)	2 (6.66)
Research	119 (15.12)	580 (73.69)	88 (11.18)	61 (31.93)	105 (54.97)	25 (13.08)	12 (40.00)	15 (50.00)	3 (9.10)
Extension Services	55 (6.98)	122 (15.50)	610 (77.50)	22 (11.21)	60 (31.41)	109 (57.06)	3 (10.00)	11 (36.66)	16 (53.34)
C^2 (Asst.Prof-Assoc.Prof): 7:92 df 1 TV: 6.64 sig at 0.01 Level C^2 (Asst.Prof-Prof) : 6.23 df 1 TV: 3.84 sig at 0.05 Level C^2 (Assoc.Prof- Prof) : 0.77 df 1 TV: 3.84 not sig at 0.05 Level									

(Note: Numbers in parentheses indicate percentages)

It is clear from Table 3 that majority of the Professors (60.00%), Associate Professors (57.60%), and Assistant Professors (73.18%) mentioned that their first priority of using ICT is for teaching followed by research. Extension services received least priority by the respondents.

It can be observed from Chi-square test that there is significant difference between the respondents of Asst.Prof and Assoc.Prof, regarding purpose of using ICT, which is significant at 0.01 level with one degree of freedom. It is also clear from the chi-square test that there is significant difference between the respondents of Asst.Prof and Prof. at 0.05 level with one degree of freedom. Further the chi-square test indicates that there is no significant difference between the respondents of Associate prof. and Prof. regarding purpose of using ICT, which is not significant at 0.05 level with one degree freedom.

It may be due to the reason that teaching and research are the main functions of any academic institution and without ICT it is not possible to perform those functions effectively in the present age of information. It can also be inferred that using ICT   to perform extension services is least preferred by the respondents.

It can be concluded that majority of the respondents mentioned that they are mainly using ICT for teaching purpose.

Table 4
Purpose of Using ICT - Gender wise

Purpose	Male n=660			Female n=348		
Ranking	**1**	**2**	**3**	**1**	**2**	**3**
Teaching	410 (62.12)	132 (20.00)	118 (17.87)	210 (60.34)	75 (21.55)	63 (18.10)
Research	120 (18.18)	440 (66.66)	100 (15.15)	70 (20.11)	220 (63.21)	58 (16.66)
Extension Services	105 (15.90)	110 (16.66)	445 (67.42)	68 (19.54)	80 (22.98)	200 (57.47)
C^2 (Male-Female): 11:29 df 2 TV: 9.21 sig at 0.01 level						

(Note: Numbers in parentheses indicate percentages)

The above table reveals that almost equal number of male (62.12%) and female (64.34) respondents mentioned that they primly use ICT for teaching followed by research (male-66.60% and female 63.21%) as second preferred activity.

The Chi-square test reveals that there is significant difference between the respondents of male and female regarding purpose of using ICT. The values are significant at 0.01 level with two degrees of freedom.

It can be concluded that majority of the male and female respondents gave first preference to teaching activity using ICT.

Table 5
Use of Search engines for teaching / research - Designation wise

Search Engines	Purpose	Asst. Professor n=787	Assoc. Professor n=191	Professor n=30	Total N=1008
Google.com	Teaching	573 (72.81)	136 (71.20)	16 (53.33)	725 (71.92)
	Research	92 (11.69)	36 (18.85)	9 (30.00)	137 (13.59)
	Communication	122 (15.50)	19 (9.95)	5 (16.67)	146 (14.48)
Yahoo.com	Teaching	222 (28.21)	55 (28.80)	8 (26.67)	285 (28.27)
	Research	287 (36.47)	75 (39.27)	9 (30.00)	371 (36.81)
	Communication	278 (35.32)	61 (31.94)	13 (43.33)	352 (34.92)
Rediff.com	Teaching	167 (21.22)	30 (15.71)	10 (33.33)	207 (20.54)
	Research	150 (19.06)	60 (31.41)	9 (30.00)	219 (21.73)
	Communication	470 (59.72)	101 (52.88)	11 (36.67)	582 (57.74)
Altavista.com	Teaching	253 (32.15)	55 (28.80)	15 (50.00)	323 (32.04)
	Research	199 (25.29)	62 (32.46)	8 (26.67)	269 (26.69)
	Communication	335 (42.57)	74 (38.74)	7 (23.33)	416 (41.27)
C^2 (Asst.Prof-Assoc.Prof): 3.82 df: 2 TV: 5.99 not sig at 0.01 Level					
C^2 (Asst.Prof-Prof) : 0.33 df: 2 TV: 5.99 not sig at 0.05 Level					
C^2 (Assoc.Prof- Prof) : 4.55 df: 2 TV: 5.99 not sig at 0.05 Level					

(Note: Numbers in parentheses indicate percentages)

It is evident from the above table that majority of the respondents (71.92 %) use Google search engine for teaching followed by 14.48 percent respondents who mentioned communication and 13.59 percent respondents who mentioned research. This result is contradicting the finding of sudha Rani (2007), which says that mostly used search engine was Yahoo.

It is clear from the above table that majority of the respondents (36.81%) use Yahoo search engine for research followed by 34.92 percent respondents who mentioned communication and 28.27 percent respondents teaching.

It is evident from the above table that majority of the respondents (57.74%) use Rediff search engine for communication followed by 21.73 percent respondents who mentioned teaching.

It can also be observed table that 41.27 percent of the respondents use Alta vista search engine for communication followed by 32.04 percent respondents who mentioned teaching and 26.69 percent who mentioned research.

It is also evident from chi-square test that there is no significant difference among the respondents of Asst.Prof. and Assoc.Prof, Asst.Prof.and Prof. Assoc.Prof and Prof regarding use of search engine for teaching/research which are not significant at 0.05 level with two degrees of freedom.

The results, goes in line with the results of the study conducted by Vandana and Kishor (2013) i.e. according to most of the respondents Google was the favorite search engine.

Based on the analysis of the data it can be concluded that majority of the respondents are using Google search engine for teaching, followed by 36.81% using yahoo search engine for research and 57.74% of the respondents using Rediff search engine for communication purpose.

Table 6
Use of Search engines for teaching / research - Gender wise

Search Engines	Purpose	Male n=660	Female n=348	Total N=1008
Google.com	Teaching	469 (71.06)	256 (73.56)	725 (71.92)
	Research	104 (15.75)	33 (9.50)	137 (13.60)
	Communication	87 (13.20)	59 (17.00)	146 (14.50)
Yahoo.com	Teaching	190 (28.80)	95 (27.30)	285 (28.30)
	Research	232 (35.20)	139 (39.9)	371 (36.80)
	Communication	238 (36.10)	114 (32.80)	352 (34.90)
Rediff.com	Teaching	136 (20.60)	71 (20.40)	207 (20.50)
	Research	141 (21.40)	78 (22.40)	219 (21.70)
	Communication	383 (58.00)	199 (57.20)	582 (57.70)
Altavista.com	Teaching	227 (34.40)	96 (27.60)	323 (32.00)
	Research	167 (25.30)	102 (29.30)	269 (26.70)
	Communication	266 (40.30)	150 (43.10)	416 (41.30)
C^2 (Male-Female): 2.21 df: 2 TV: 5.99 not sig at 0.05 level				

(Note: Numbers in parentheses indicate percentages)

It can be observed from Table 6 that most of the respondents (71.92%) depend on Google search engine for teaching. Almost equal percentage of respondents are depending for teaching 28.30%, research 36.80% and

communication 34.9% on Yahoo search engine. It can also be observed that most of the respondents are depending on Rediff (57.70%) and Altavista (41.30%) for communication.

It can be inferred that the respondents are not satisfied with any single search engine to perform various activities. Hence they are depending on different search engines to perform various activities like teaching, research, and communication.

The Chi-square test reveals that there is no significant difference among the respondents of male and female regarding use of search engine as it is not significant at 0.05 level with two degrees of freedom.

It can be concluded that majority of the male and female respondents use Google search engine for teaching.

Table 7
Advantages of ICT - Designation wise

Advantages	Asst. Professor n=787	Assoc. Professor n=191	Professor n=30	Total N=1008
ICT facilitates sharing of resources and expertise	740	181	28	949
	(94.03)	(94.76)	(93.33)	(94.15)
Greater flexibility in carrying out various tasks	691	169	29	889
	(87.80)	(88.48)	(96.67)	(88.19)
ICT literacy skills enhance confidence and enthusiasm	709	175	28	912
	(90.09)	(91.62)	(93.33)	(90.48)
Planning, preparation and designing reading materials are easy	718	175	29	922
	(91.23)	(91.62)	(96.67)	(91.47)
Access to up-to-date information of the institution	725	175	30	930
	(92.12)	(91.62)	(100.00)	(92.26)
C^2 (Asst.Prof-Assoc.Prof): 14.72 df 1 TV: 6.64 sig at 0.01 Level				
C^2 (Asst.Prof-Prof) : 12.59 df 1 TV: 6.64 sig at 0.05 Level				
C^2 Assoc.Prof- Prof) : 24.22 df 1 TV: 6.64 sig at 0.05 Level				

(Note: Numbers in parentheses indicate percentages)

A question is asked regarding advantages of ICT with "YES" or "NO" options. Positive responses received for each advantage alone are shown in Table 7.

It is found from the above table that in the opinion of most of the respondents, the main advantage of ICT is that it facilitates sharing of resources and expertise (94.15%) followed by access to up-to-date information of the institution (92.26%). It can also be observed that cent percent professors opined that access to up-to-date information of the institution is the advantage of ICT.

It is clear from Chi-square values that there is significant difference among the respondents of Asst.Prof and Assoc.Prof, Asst.Prof. and Prof. Assoc.Prof and Prof. regarding opinions on advantages of ICT and the values are significant at 0.01 level with one degree of freedom.

It can be concluded that most of the respondents mentioned that the main advantage of ICT is sharing of resources and expertise.

Table 8
Advantages of ICT - Gender wise

Advantages	Male n=660	Female n=348	Total N=1008
ICT facilitates sharing of resources and expertise	623 (94.40)	326 (93.70)	949 (94.10)
Greater flexibility in carrying out various tasks	591 (89.50)	298 (85.60)	889 (88.20)
ICT literacy skills enhance confidence and enthusiasm	595 (90.20)	317 (91.10)	912 (90.50)
Planning, preparation and designing reading materials are easy	602 (91.20)	320 (92.00)	922 (91.50)
Access to up-to-date information of the institution is possible	608 (92.20)	322 (92.50)	930 (92.30)
C^2 (Male-Female): 12.92 df 1 TV: 6.64 sig at 0.01 level			

(Note: Numbers in parentheses indicate percentages)

Table 8 indicates clearly that in the opinion of almost equal number of male and female respondents (94.40% and 93.70%) the main advantage of ICT is it facilitates sharing of resources and expertise. Other advantages are also received almost equal importance from the male and female respondents.

The Chi-square test reveals that there is significant difference between the respondents of male and female regarding opinions on advantages of ICT. The values are significant at 0.01 level with one degree of freedom.

It can be concluded that most of the male and female respondents opined that ICT facilitates sharing of resources and expertise.

Table 9
Disadvantages of ICT - Designation wise

Disadvantages	Asst. Professor n=787	Assoc. Professor n=191	Professor n=30	Total n=1008
Interruption of electricity	552 (70.14)	145 (75.92)	24 (80.00)	721 (71.53)
Disruption of data by virus attacks	587 (74.59)	157 (82.20)	20 (66.67)	764 (75.79)
Sabotages, intended manipulations and information stealing	462 (58.70)	122 (63.87)	19 (63.33)	603 (59.82)
Computer frauds in doing the examinations and exercises	472 (59.97)	114 (59.69)	15 (50.00)	601 (59.62)
Destructive effects of missing the culture of using ICT in education	486 (61.75)	128 (67.02)	20 (66.67)	634 (62.90)
C^2 (Asst.Prof-Assoc.Prof): 9.08 df 2 TV: 9.21 sig at 0.01 Level				
C^2 (Asst.Prof-Prof) : 7.52 df 1 TV: 5.99 sig at 0.01 Level				
C^2 (Assoc.Prof- Prof) : 18.23 df 1 TV: 9.21 sig at 0.01 Level				

(Note: Numbers in parentheses indicate percentages)

It is clear from the above table that most of the respondents opined that disruption of data by virus attacks (75.79%) is the main disadvantage followed by interruption of electricity (71.53%). The remaining disadvantages are also mentioned by good number of respondents. Hence proper measures need to be taken by the authorities.

The Chi-square test reveals that there is significant difference among the respondents of Asst.Prof and Assoc.Prof, Asst.Prof. and Prof. Assoc.Prof and Prof. regarding disadvantages of ICT. The values are significant at 0.01 level with two degrees of freedom.

It can be concluded that in the opinion of most of the respondents, the main disadvantage of ICT is disruption of data by virus attacks.

Table 10
Disadvantages of ICT - Gender wise

Advantages	Male n=660	Female n=348	Total N=1008
Interruption of electricity	462 (70.20)	259 (74.40)	721 (71.50)
Disruption of data by virus attacks	492 (74.50)	272 (78.20)	764 (75.80)
Sabotages, intended manipulations and information stealing	404 (61.20)	199 (57.20)	603 (59.80)
Computer frauds in doing the examinations and exercises	398 (60.30)	203 (58.30)	601 (59.60)
Destructive effects of missing the culture of using ICT in education	429 (65.00)	205 (58.90)	634 (62.90)
c^2 (Male-Female): 1.08 df 2 TV: 5.99 not significant at 0.05 level			

(Note: Numbers in parentheses indicate percentages)

It is obvious from the above table that in the opinion of equal number of male and female (74.5%) respondents the disadvantages of ICT are disruption of data by virus attacks and interruption of electricity respectively. The other disadvantages are mentioned by comparatively less number of respondents. Though the number is comparatively less, measures are to be taken to rectify the situation.

It is also evident from Chi-square test that there is no significant difference between the male and female respondents regarding disadvantages of ICT. The values are not significant at 0.05 level with two degrees of freedom.

It can be concluded that most of the female respondents opined that the major disadvantage of ICT is disruption of data by virus attacks.

6.MAJOR FINDINGS:

❖Majority (73.18%) of the respondents mentioned that they are mainly using ICT for teaching purpose.
❖Majority (72.81%) of the respondents are using Google search engine for teaching.
❖Most (94.76%) of the respondents mentioned that the main advantage of ICT is sharing of resources and expertise.
❖Most (75.79%) of respondents the main disadvantage of ICT is disruption of data by virus attacks.

7.SUGGESTIONS:

❖ The priorities are evenly provided to teaching (1), research (2) and extension services by the respondents irrespective of their cadre and gender. Steps are to be taken by authorities to conduct awareness programs on ICT facilities available, to make the best use of them.
❖ The results relating to search engines reveal that the respondents depend on different search engines for different activities which may be time consuming. Training programs on features and use of various search engines may yield good results.
❖ As most of the respondents mentioned disruption of data by virus attacks and interruption of electricity are the hindrances of ICT, measures are to be taken like careful installation of antivirus softwares and provision of uninterrupted power supply.

8.CONCLUSION:

Today's world is globalized; Information and Communication technology (ICT) is diffusing its services in diverse domains. ICT has become, within a very short time, one of the basic building blocks of modern society. Many colleges now understand the importance of ICT and mastering the basic skills and concepts of it as part of the core education. In this study, an attempt has been made to determine the extent of the purpose of using ICT, advantages and disadvantages, and using of search engines for teaching, research, and communication in engineering colleges. It is necessary to mention that the ICT has been tremendously influencing all spheres of our life.

9.REFERENCES:

1.Katz, I.R., (2005). Beyond technical competence: Literacy in information and Communication technology. Educational Technology Magazine, 45.6, 44-47.

2.Kalsum, U. (2008). Information communication Technology in Education. Agra H.P. Bhargave Book House, 45-52.

3.Kirkup, Gill & Kirkwood, Adrian.(2005).Information and communicationstechnologies (ICT) in Higher Education teaching – a tale of gradualism rather than revolution. Learning, Media and Technology, 30(2), 185-199.

4.Odufuwa, S. (2006). Information and Communication Technology (ICT) as a research Tool in libraries. Nigerbiblios. 17(1), 12-19.

5.Demirarslan, Y & Usluel, Y. (2005). The state of teachers in the integration of ICT into the teaching learning process, The Turkish online journal of Educational Technology (TOJET), 4(3), 37-39.

6.Sudharani, Y. (2007). Internet as an Information sources: A survey of engineering students in Nellore district. (Unpublished doctoral dissertation). Department of Library and Information Science, Sri Venkateswara University, Tirupati.

7.Kaino, S. (2007). Contribution of ICTs in achieving the goals and the participation of higher learning institutions in Cozal: A survey. Electronic journal of Information Technology. 5(2), 12-19.

8.Vandana Sengar & Kishor Shegorkar (2013). Use of Internet in engineering colleges of Udaipur, Rajastan: A case study. Journal of Library and Information Science Technology .9.2.

A. Sivakesavulu
Research Scholar, Dept.of. Library and Information Science, Sri Venkateswara University, Tirupati, A.P.

K. Padmini
Professor , Department of Library and Information Science, Sri Venkateswara University, Tirupati, A.P.