

**Searching Scientific Information on the Internet  
by Academics: A User Survey**

**By**

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**ABSTRACT**

**This study examines the use and perceived importance of the Internet amongst academics in University environment. A detailed questionnaire was distributed among the faculty members of Andhra University. The findings revealed that the primary purpose of using the Internet is for research; Full text is most suitable format; consulting e-journals is infrequent; Yahoo and Google are the favourite search engines. Among other findings, the study revealed that searching the World Wide Web is not without difficulty and though the Internet is a good information source, it has not replaced print and is not a panacea for all information questions.**

**KEYWORDS: Internet Searching, Use of Internet, Searching Scientific Information, Search Engines**

**0. INTRODUCTION**

**The information environment changes rapidly as alternative and supplementary information sources emerge such as Information Super highway. There is an increased attention by academics to the potential value of the Internet generated data for a wide range of scientific, research, educational and social questions. As a source of serious subject information, the Internet has created exciting opportunities since its inception. Currently, information access virtually is made possible to both researchers and the academics. Therefore, the Internet and the Web have an increasingly pervasive presence on University campus. There is “a new communication paradigm, a shift from**

face-to-face human contact to human machine interaction; paper based information access to electronic delivery; from text centred mode to electronic media; from physical presence to tele presence or virtual presence.”<sup>1</sup> However there is hype and in reality to what extent the Internet can offer substantive information to academicians is a matter for study and analysis. This paper attempts to make a study on the use of the Internet by the academics of Andhra University and their opinion on its usefulness.

## **1. RELEVANCE OF THE STUDY**

Academics generally have three aspects to their daily work: teaching, research and administration. To gain a greater understanding about how the Internet is revolutionizing the activities of academics, especially the research and teaching, a number of studies have been conducted and some are in progress. The studies conducted by Jill Slay <sup>2</sup>, Harry M. Kibirige and Lisa De Palo<sup>3</sup>, Linda Marie Golian <sup>4</sup>, Robert E Molyneux and Robert V. Williams <sup>5</sup>, Henk J Voorbij <sup>6</sup> et al., have explored the use of the Internet for academic and research information. In India, such studies are few and there is a need to ascertain the use of the Internet by academics in the University environment.

## **2. OBJECTIVES OF THE STUDY**

It was hypothesized that budget cuts in the acquisitions for university libraries jeopardize access to and use of information by the academics, who resort to alternate sources for their information needs. Therefore it is assumed that their dependence on the Internet must have increased. The basic elements often required in the electronic resources, that academic information seekers desire, are accessibility, readability, relevance, timeliness and authority. On the part of the user, the requirements are for the knowledge of existing resources, skills, experience, exposure and the user's ability to search, and retrieve information. Hence the objectives of the study include:

- To identify the type of access to the Internet and its frequency of use;
- To find out the use pattern of the Internet resources for various purposes;
- To assess the relative importance of various Internet resources;
- To study the priorities in search engines as to their retrieval capabilities;
- To find out the level of satisfaction with the Internet based services.

## **3. SAMPLE AND RESPONSE**

The study confined to Andhra University and was targeted to academics in all faculties. The total faculty on campus is 715 and a simple stratified random sampling technique was applied. The sample size was 20% from each strata based on discipline viz. Engineering, Sciences and Social Sciences and cadre i.e. Professors, Associate Professors and Assistant Professors. The following table reveals the details of response rate.

**Table-1 Display of Response Rate**

<b>Sample</b>	<b>Soc. Sciences</b>	<b>Sciences</b>	<b>Engineering</b>	<b>Total</b>
Total faculty	292	231	192	715
Questionnaires distributed	60	45	40	145
Responses received	55	42	32	129
Response rate	91.66%	93.33%	80%	88.96%

## **4. USER SURVEY ANALYSIS**

### **4.1 Users and non-Users**

To determine the percentage users of the Internet, the questionnaire was distributed to the selected sample. 27 faculty members out of 129 respondents are *non-users* i.e. 20.93% that includes all disciplines and categories. Hence majority of respondents are found to be users of the Internet. The questionnaire contained few questions for non-users to assess their opinions.

The non-users have given variable reasons for not using the Internet. While 18.5%, all from Social Sciences, are not familiar with computer, 40.74% are not familiar in the use of the Internet. However 66.66% expressed that they are not having access to the Internet but they may be considered as potential users. The other reasons do not seem to be significant, as only 7.4% opined that Internet is a waste of time. To a supplement on their interest to use the Internet in future, all of them responded in affirmative. Hence it can be inferred that the non-users, if provided with facilities and training will become the regular users.

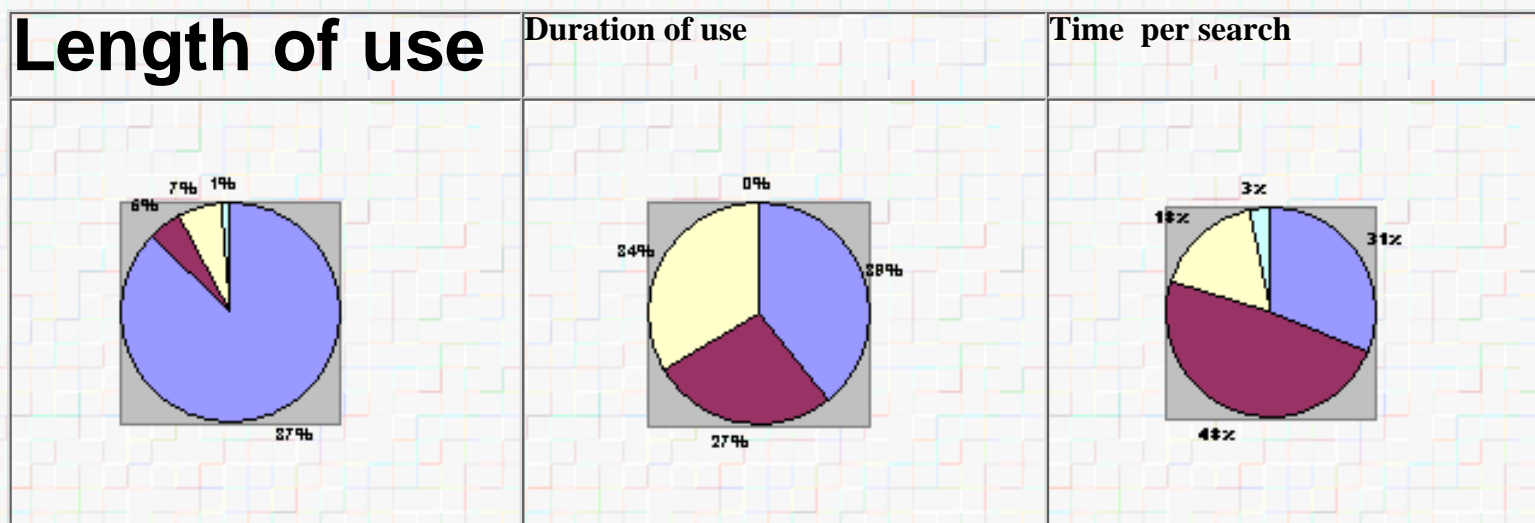
*The further analysis was made with 102 respondents who are real users of the Internet.*

### **4.2 Access to the Internet**

The Andhra University teachers are not having a common Internet facility on campus. Some Departments have the facility under research projects, while the library offers a limited access. Hence the respondents have been asked to indicate how do they access the Internet and the answers are multiple. 78 (76.47%) of faculty under study access the Internet through the facility at home, 43(42.15%) access it from private Cyber café and an almost equal number i.e. 42 (41.17%) are accessing the Internet from their work place. Out of them, 22 (21.56%) are from Engineering Departments. Hence it can be interpreted that respondents are serious users as they access the Internet in spite of the limited facilities on campus.

### **4.3 Length of the Internet Use**

The next series of questions were to find out facts such as when did the users start using the Internet, the estimated amount of time spent on the Internet for study or work, and the time taken per search.



The data reveals that 89 (87.25%) of the actual users are using the Internet for more than one year. It shows that there is statistically significant difference between the three disciplines with regard to the use of the Internet. Only 77.27% of Social Scientists have experience with the Internet for more than one year, compared to 96.77% of Scientists and 92.59% of Engineering faculty. There are no significant differences between different cadres.

*Duration of the Internet use:* As can be seen from Chart, the amount of time that is spent on the Internet diverges widely, about 40 (39.2%) use the Internet once or twice a week, 27 (25.95%) of them use it twice a week. Other 35(34.13%) are irregular users and the use ranges between one week to one month. A revealing fact is that 13 (12.74%) of respondents use only once in a month. Another fact is that Social scientists are more regular users (34.54%) compared to 26.19% of Scientists and 31.24% of Engineering faculty. Further professors are the most regular users than the Associate and Assistant Professors as the figures indicate.

*Amount of Time spent on the Internet:* The time spent by the respondents with the Internet per search varies. 49 (48%) of the total respondents spent about 30 min. to one hour per search, followed by 32 (31.37%) users for less than 30 min. Only 17.64% use it for one to two hours. There were no statistically significant differences between the three disciplines and cadres. It is evident from the above analysis that the use of the Internet by faculty is not exhaustive but time bound. The reason may be the involvement of cost as it was revealed that 86 (84.31%) of respondents access it on payment.

#### 4.4 Purpose of the Internet Use

The academics might be using the Internet for different activities. To ascertain the priorities among them, the respondents were asked to indicate the purpose of using the Internet in rank order. The following table displays the findings.

**Table 2: Purpose to use the Internet**

Purpose	Rank	Social Sciences			Sciences			Engineering			Total (%)
		P	A.P.	ASP	P	A.P.	ASP	P	A.P.	ASP	
Teaching	1	2	2	1	3	6	2	2	1	5	24 (23.52)
	2	6	7	2	4	1	4	5	4	1	34 (33.33)
	3*	10	9	5	8	3	0	5	2	2	44 (43.13)
Research	1	16	18	1	12	9	4	9	6	5	80 (78.43)
	2	2	0	7	2	1	0	2	1	3	20 (19.60)
	3	0	0	0	1	0	1	0	0	0	02 (01.96)
Publishing	1	0	0	4	0	0	4	0	0	3	11 (10.78)
	2	10	9	2	4	1	0	2	1	1	30 (29.41)
	3	8	9	2	11	9	2	10	6	4	61 (59.80)
Peer Review	1	0	0	0	0	0	0	0	0	0	00 (00.00)
	2	0	8	0	1	1	1	0	1	0	12 (11.76)
	3	18	10	8	14	9	5	12	6	8	90 (88.23)

**P=Professor; A.P. =Associate Professor; A.S.P. =Assistant Professor.**

\* For the purpose of analysis 3<sup>rd</sup> and above rankings are represented as 3<sup>rd</sup>.

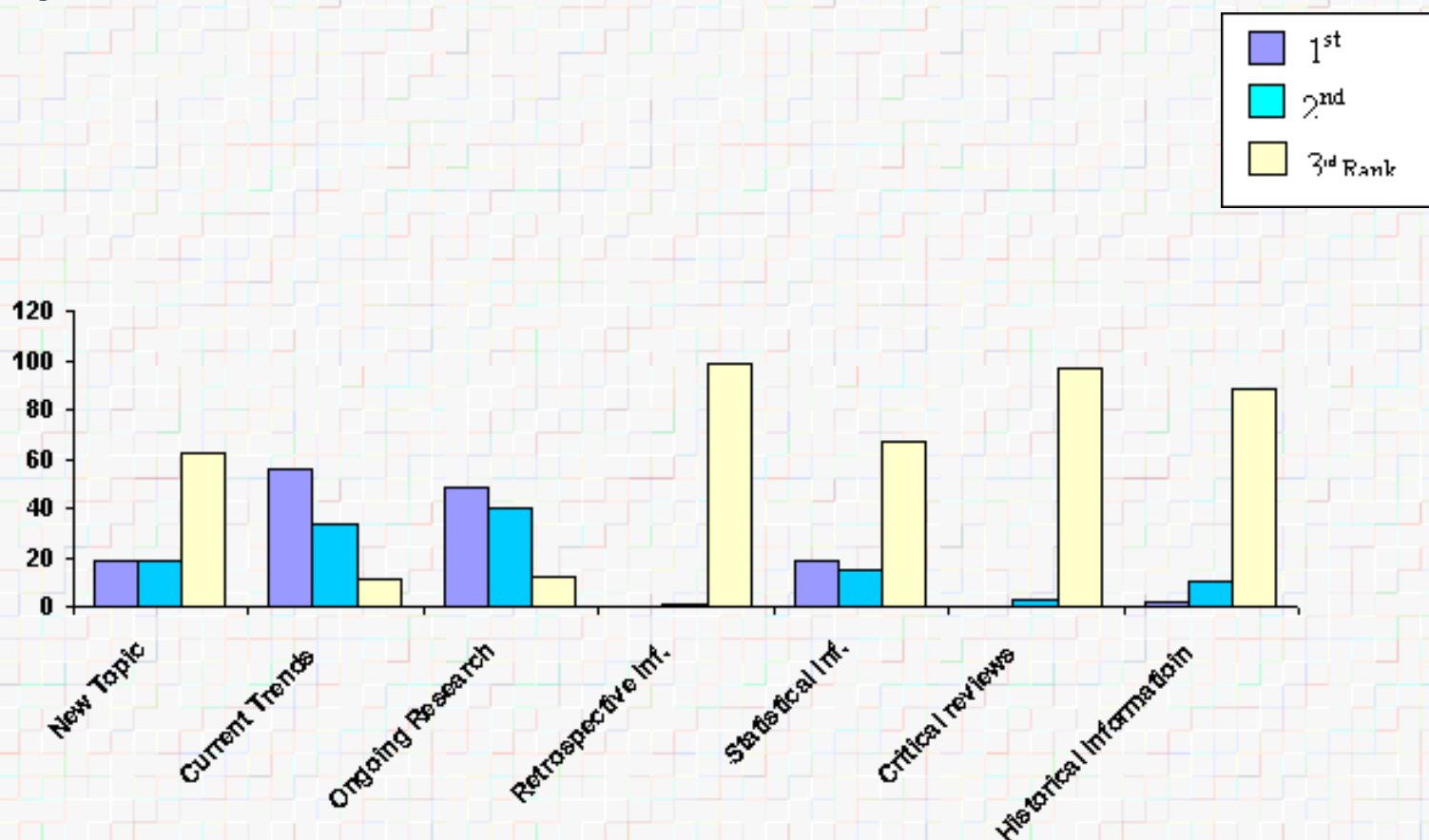
It is evident from the above Table that respondents make use of the Internet primarily for research as 78.43% ranked it first priority followed by teaching as 23.52% and 33.33% ranked it first and second priority. Publishing was ranked as second by 29.41%. Peer review does not seem to be important. Hence it can be inferred that the Internet is useful for the academics primarily for research. There were no significant differences between different disciplines. However there is statistical difference between cadres as the Assistant Professor (10.78/ 37.93) uses the Internet for Publishing as their first priority as against the other two categories.

**Use of the Internet for non-scholarly purposes:** The faculty under study was asked to indicate whether they use the Web for non-scholarly purposes such as entertainment, informal message transmission, news, greetings, shopping and non specific surfing. 90.19% are using it for informal e-mail, followed by 64.70% for greetings and 39.2% for news. Therefore the sample makes use of the Internet not only for academic but also for non-scholarly activities.

#### 4.5 Nature of Information required

The teacher's information requirements vary according to the tasks on hand. To find out the priority order between different types of information (such as new topics, current trends, ongoing research, retrospective information, statistical information, critical reviews, and historical information) the sample was asked to give their requirements in order of priority.

The analysis reveals that Current trends seem to be the first priority for majority of respondents as the figures 55.88% and 33.33% of first and second rank respectively indicate. This is followed by ongoing research as 48.03% and 40.19% of the faculty preferred it as first and second priority. However it was found that there is difference in the opinions of faculty with regard to new topics and statistical information. While 15.68%, 12.74% of Social scientists (54.54% among social scientists) marked the 'new topics' as their first and second priority, the Scientists and Engineering faculty (94.12%) marked it as least priority. Similarly 'statistical' information is preferred by 18.62%, 14.70% respondents, all Social scientists (61.81% among social scientists) and the Science and Engineering faculty did not prefer it. The findings indicate the nature of information required by University faculty. The Science and Engineering disciplines depend on laboratory information while the social scientists on the literature. There were no significant differences between different cadres.



#### 4.6 Suitable Formats of the Internet resources

The Internet offers information in different formats such as full text, abstracts, reference/referral, bibliographies or book lists etc. The sample was asked to rank their priorities among the available options. Full text seems to be the most suitable format as 56.86%, and 28.43% marked it as their first and second rating. The next priority was given to 'Abstracts' as 53.92% ranked it as their second priority and 36.27% as their first. The other formats were insignificant in view of the respondents. There were no significant differences between different disciplines and cadres.

#### 4.7 Relative importance of the Internet information

The respondents were asked to rate the importance of eight services on the Internet for their Teaching, Research and Publishing activities. The following Table displays the results.

**Table 3: Relative importance of the Internet services**

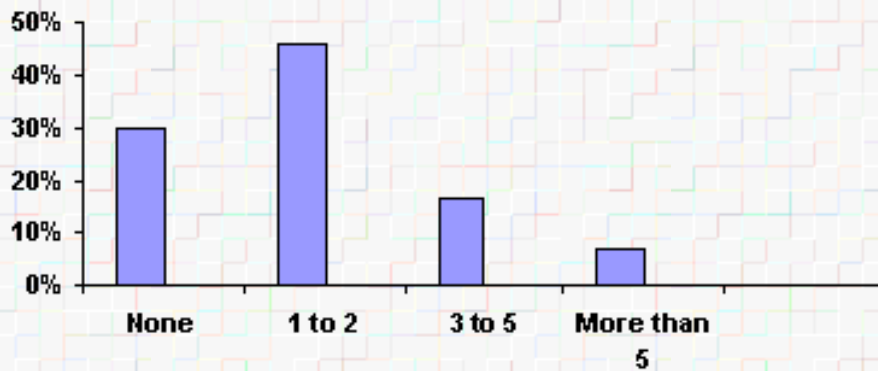
SERVICES	TEACHING			RESEARCH			PUBLISHING		
	1	2	3	1	2	3	1	2	3
E-mail	07.84	29.41	62.74	48.04	19.60	32.35	19.60	27.45	52.94
Discussion/Newsgroup	08.82	25.49	65.68	26.47	18.62	54.90	03.42	13.72	82.35
Bibliographic d/b	08.82	27.45	63.72	40.19	21.56	38.23	12.74	20.59	66.66
Access/download text	27.45	29.41	43.13	48.04	23.42	28.43	10.78	18.63	70.58
E-journals	11.76	29.41	58.82	36.27	29.41	34.31	10.78	30.39	58.52
Ongoing research	10.78	28.43	60.78	64.70	14.70	20.59	11.76	27.45	60.78
Chatting	02.94	25.49	71.56	17.64	14.71	67.64	02.94	11.76	85.29
Down load S/W	13.72	24.51	61.76	29.41	24.50	46.08	08.82	11.76	79.41

1= most useful, 2= useful, 3= not useful.

It is evident from the above table that the Internet is 'most useful' for academics for research activities as the figures for On going research information (64.70%), Access and down load of full text (48.03%), E-mail (48.03%), Bibliographic d/b (40.19%), E-journals (36.27%) indicate. The web services are 'useful' for teaching as the respondents rating ranges between 24.5% and 29.41% for all services available on the Internet. A significant fact, against the general belief, is that the Internet services are 'not useful' for publishing activity by the academics. Another finding is the average use of electronic journals. In spite of the usefulness of e-journals for research (65.68%), their use in teaching and publication is not considerable as 58.82% expressed that they are 'not useful'

#### 4.8 Use of E-journals

The infrequent use of electronic journals was confirmed by yet another question: How many electronic journals on the Internet are consulted regularly? The analysis indicates that 29.41% do not consult any e-journals, while 45.06% scan one or two. Only 17.64% and 7.84% consult 3-5 and more than five e-journals respectively. However further analysis reveals that there is significant variation between disciplines in the use of e-journals. While 29.03% and 19.35% of the Scientists consult 3-5 and more than five e-journals regularly, 29.62%, 3.7% of engineering faculty did it and Social scientists drew a blank. Hence it can be inferred that the Scientists make use of e-journals more than their counterparts. This may be because of the availability of more number of electronic journals in scientific disciplines.



#### 4.9 Use of Search Engines

To ascertain the way users search information resources on the Internet, the respondents were given a list of eight search engines along with an open option of 'Any other' and were requested to indicate whether they use them often, sometimes and never. The findings indicate that, perhaps not unexpectedly, Yahoo and Google are the most popular search engines.

Table 4: Display of use of Search engines

Search Engine	Often %	Sometimes %	Never %
Alta Vista	15.68	25.49	58.82
Excite	01.96	12.74	85.29
Google	37.25	18.62	44.11
Hot Bot	2.94	3.92	93.13
Look Smart	14.70	08.82	76.47
Lycos	04.90	06.86	88.23
Savvy	01.96	05.88	92.15
Yahoo	66.66	13.72	19.60

The Table summarizes the most important results. Yahoo is being often used by 66.66% followed by Google 37.25%. Alta Vista is also used often by 15.68% respondents and 25.49% sometimes. The use of other search engines is not significant.

#### 4.10 Searching Process

Supplementary questions were asked to find out how the academics got acquaintance with favourite search engines and also about the nature of search options. 52.94% have selected the search engine(s) based on the recommendation of their colleagues, followed by 'reading about them in documents' according to 40.19%.



With regard to search options i.e. simple or advanced, 93.33% expressed they opt for simple search. To another supplementary on to what extent do search results justify the time spent on searching in general, 76.47% respondents stated that it is justifiable 'to some extent' while 17.64% said it is fully justifiable.

Further to assess the usefulness of search results of the Internet, six statements were given and the users were asked whether they agree or disagree. 87.25% agreed that 'they can always find some useful information on the Internet'; 50% expressed that 'the Internet has become the most important information source'; 75.49% agreed that 'it is easy to perform subject searches on the Internet'; and 66.67% agreed that 'they can have exhaustive search on the Internet'. However 78.43% disagree to the statement that they 'use less printed information since the Internet use'; and 73% disagree that 'they always find answer to their queries on the Internet'. The findings indicate that in view of the respondents, the Internet is a useful information resource, but has not replaced the print and is not a panacea for all information questions.

#### 4.11 Problems while using the Internet

Subject searching on the Web is not free from problems. 66.66% of the faculty under study agrees with the statement. Out of the faculty who disagree with the statement, 42.42% are from sciences. Hence the science faculty seems to be better in the use of the Internet than their counterparts in other disciplines. The following Table displays the problems associated with the use of the Internet as given by the respondents in order of priority.

The figures reveal that lack of quality, too slow, irrelevant hits, lack of organization of information on the web, and too much information, in that order, are the problems the users experience while searching the Internet for information resources. The problems indeed relates to the perceived quality of information, slow or interrupted transmission, the awareness of these resources, and skills of end user. Therefore these are relative in nature and general interpretation can't be made.

**Table 5: Problems associated with the Use of the Internet.**

Problems	Ist rank	IInd rank	IIIRD rank
	%	%	%
Too slow	51.51	24.24	24.24
Too much inf.	45.45	25.75	28.78
Irrelevant hits	51.51	15.15	18.18
Internet charges	09.09	54.54	36.36
Lack of organiz.	48.48	33.33	15.15
URL may change	00.00	01.51	98.48
Lack of quality	60.60	15.15	51.51
Reliability of inf.	16.66	31.81	51.51
Weighted relevance	03.03	03.03	93.93

#### 4.12 Impact of the Internet on Personal activities

There is a general belief that the Internet has influenced the personal life of the users. To find out the truth, the faculty under study were asked rate the related statements as 'Yes', 'To some extent' and 'No'.

**Table 6: Impact on Personal Activities**

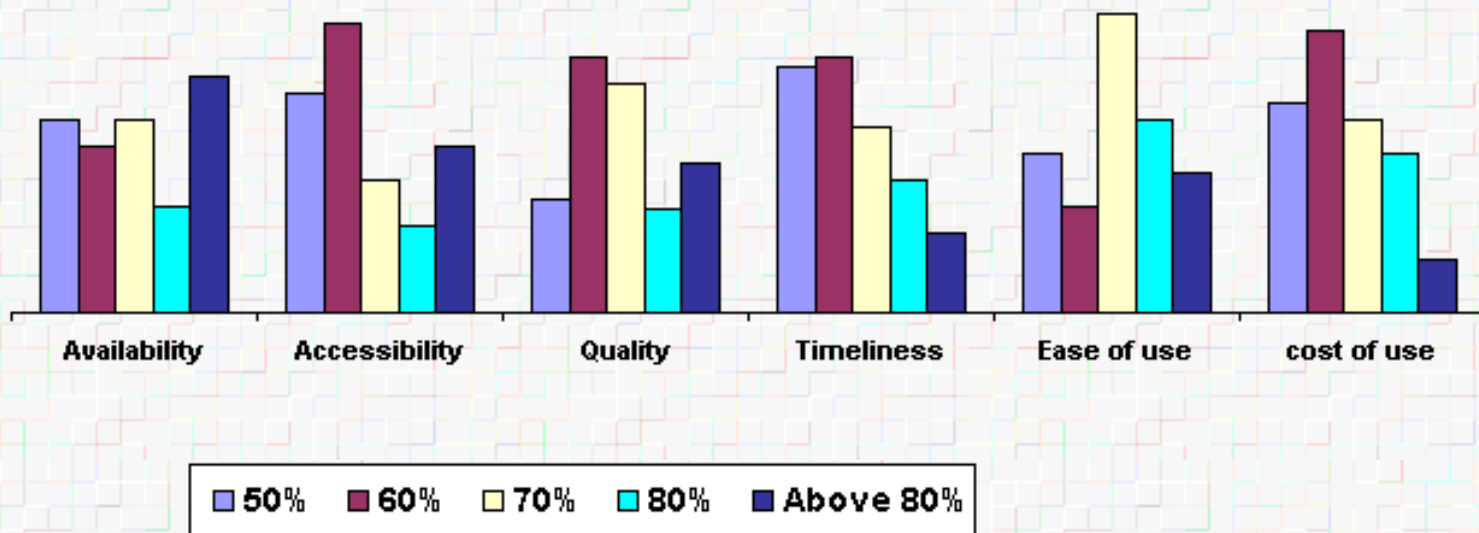
<b>Nature of Impact</b>	<b>Yes (%)</b>	<b>To some extent (%)</b>	<b>No (%)</b>
Change in day to day work	22.54	31.37	46.07
Improved research production	44.11	49.01	06.86
Reduction in Lib use	18.62	40.19	41.17
Less contact with colleagues	10.78	22.54	66.66
Less time on reading print	07.84	32.35	59.80

The table displays that except 'improved research production', a positive response indeed, the Internet has not made any radical influence on the academics. However a note worthy point is that library use has been reduced to an extent of 40.19%. This may be because of reduced foreign subscriptions, delay in procurements etc or the availability of full text documents on the web. A further study is required on this aspect.

Further analysis has revealed that there is significant variation in the opinions between faculties of different disciplines. Only 31.81% of Social Science faculty opined that the Internet has improved the research/literary productivity, while 64.51% of Science and 40.74% of Engineering counterparts expressed a similar opinion. Likewise, only 11.36% of Social science respondents expressed that there is reduction in library use, where as 25.80% and 22.22% respectively of the other two disciplines agreed with them. However there is no significant variation between different cadres.

#### **4.13 Level of satisfaction of the Internet use**

Finally the sample was asked to mark their level of satisfaction with the Internet services against certain measurable criteria. Six levels were indicated from lowest 50% to highest above 80%. The tabulated data is presented below as bar chart.



The chart displays that the respondents are more satisfied with the availability of information as 26.47% have a satisfaction level of above 80%. Ease of use seems to have attracted many users as 21.57% and 16% have 70% and 80% satisfactory level. However there are concerns with the quality, timeliness and cost of use, as the satisfactory levels are low.

## 5. CONCLUSIONS AND DISCUSSION

The major conclusions of this study are:

- Majority of the members of the academic community are using the Internet for study- or work- related purposes. However the access is personal and time bound as it is not available at work place. The University faculty, who are not only users but also contributors to Internet resources, needs to have access at work place.
- A major reason for not using the Internet is lack of access. The non users have positive attitude towards the Internet and would like to use them in future. Hence the University library should offer the facility and there is a strong need for training the end users.
- The WWW is being used primarily for research information. The full text plays an important role. The impact of electronic journals is not as expected to be. The reason may be that there are few free full text journals available on the net. Hence the library can have e-subscriptions after ascertaining user's opinion. That facilitates easy and quick access to e-journals. There are attempts for consortia and some positive results can be expected from these attempts.
- Performance of searches on the Web is associated with difficulty. The most severe problems seem to be irrelevant hits, too slow, and lack of organization of material on web. There are concerns about quality of information too. Though the new techniques are welcome in principle, little advantage is made out of them.. Therefore, measures have to be initiated for optimal utilization of web resources by academicians.
- Yahoo and Google are the most frequently used search engines. However, use of advanced search facilities is

very low; hence use of search engines does not have an optimal effect. This again requires awareness and skill in the use of subject directories, subject information gateways etc. that necessitates training.

- The Internet has conquered a place for itself in the academic and research activities of university faculty, but has not pushed aside traditional printed resources.
- The users are satisfied with the quantity and currency of information. However much needs to be done regarding the quality and cost per use. Increased network facilities and proper training may improve the levels of satisfaction.

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