

INTERNET BASED COMMUNICATION AMONG SCIENTISTS

by

Dr H N Prasad *
Shuchita Singh **

ABSTRACT

Presents the study relating to the use of the Internet (e-mail service) by scientists working in areas of Physics, Chemistry, Botany, Zoology and its impact on their collaborative efforts and productivity. Concludes that the findings support the hypothesis that email use has a positive impact on the productivity of the scientists.

* Reader, Banaras Hindu University, Varanasi

** Research Scholar, Banaras Hindu University, Varanasi

0 Introduction

The use of Internet by scientists in research work has increased considerably in India in recent years. The use of e-mail by scientists in coordinating their activities and helping them to have more contacts in their fields, has greatly promoted the utility of Internet. The scientists are relying more and more on computer based communication via Internet for access to databases and journals etc. The review of literature reveals that scientists are making more and more use of Internet for e-mail purpose for their professional collaboration and productivity. In India, there are very few empirical studies on the increasing use of e-mail by scientists. The Internet has created the opportunities by providing the means of communication with the fellow scientists across the world and India, there by overcoming the time and space constraints. Now it is more feasible to have collaboration in the field of science involving several scientists and institutions. The Internet and related technology has facilitated the sharing of knowledge, data and experience more readily and rapidly. The computer mediated communication through Internet has significantly influenced the productivity of the scientists.

1 Objective, Scope and Method of Study

The aim of the study was to investigate the effect of e-mail on the nature and intensity of collaboration in the field of science by the scientists. The study also attempts to examine the effect of the use of e-mail on the productivity of the scientists.

The study was based on the survey of the scientists/researchers in the field of Physics, Chemistry, Botany and Zoology at Banaras Hindu University. A pilot study was carried out to identify the scientists into 2 categories:

- (i) Group of Scientists using e-mail regularly
- (ii) Group of scientists not using e-mail.

The study was carried out taking into consideration the sample of scientists from 4 disciplines i.e. Physics, Chemistry, Botany and Zoology. In order to elicit the necessary data, questionnaire was designed and distributed to the scientists/researchers in the fields mentioned above.

2 Hypothesis

The communication by scientists using Internet increases the working efficiency, which directly results into increased scientific productivity. The Internet also provides facility for access to scientific information. It also provides access to data sources. The Internet also provides access to many of the on-line journals and full text articles which directly motivates the scientists to go for collaborative researches and thus increase the productivity of the scientists.

The following hypothesis were framed keeping in view the objective of the study:

- (i) The use of Internet has significant effect on the productivity of the scientists.
- (ii) The scientists using Internet are more collaborative in their field.

3 Data Analysis and Interpretation

The data from the four disciplines i.e. Physics, Chemistry, Botany and Zoology was collected using the questionnaire. The questions in the questionnaire related to their on-going research work, their mode of communication, use of Internet and its effect on their productivity etc. The number of articles/reports/monographs published by them during the last 5 years. The questions also related to their e-mail use, number of e-mails sent by them as well as received by them to other professional scientists. The sample of study included 180 scientists.

Table1: The distribution of scientists according to e-mail use

Scientists	E-mail users	Non E-mail users
Physics	40(88.9%)	5(21.1%)
Chemistry	30(73.2%)	11(26.8%)
Botany	40(90.9%)	4(9.1%)
Zoology	35(70%)	15(30%)
Total (N=180)	145(80.6%)	35(19.4%)

The data comprises of 170 scientists from the four disciplines of Science and Technology (Physics, Chemistry, Botany, Zoology). The data reveals that out of the responding scientists 80.6% are e-mail users, while only 14.7% are non-email users. It may be pointed out that Deptt. of Botany, Zoology and Physics are centres of advanced studies at Banaras Hindu University in view of their high rating by UGC. These Departments are known for their high research output in the country:

Table 2: Data of the research scientists

Discipline	N	Publications (last 5 years)	Mean	Number of scientists carrying collaborative research
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Physics	45	247	5.5	40(88.4%)
Chemistry	41	185	4.5	20(45%)
Botany	44	255	5.8	38(86.4%)
Zoology	44	195	3.9	20(40%)
Total	180	882	4.9	

The respondents average 4.92 publications over the last 5 years. The discipline wise average of publications over last 3 years is given in Table 2. It is interesting to note that the scientists use of e-mail in BHU is a phenomena of recent years beginning from the year 1995. The scientists in the field of Physics and Botany were the early users of e-mail. The scientists from the field of Zoology were the recent most users. The extent of use of e-mail is evident from Table 3:

Table 3: E-mail use by the scientists

Discipline	Starting year of e-mail use	Average no. of e-mail sent per day	Average no. of e-mail received per day	Use of e-mail for contacting scientists
Physics	1995	5.5	8.9	1.2
Chemistry	1997	3.8	6.3	0.23
Botany	1995	5.4	7.6	0.98
Zoology	1997	3.2	4.2	0.11

The analysis of data given in Table 3 reveals that the Physicists are potential users of e-mail, their average number of email sent per day is 5.5 and average number of email received per day is 8.9. The Zoologists were found to be low users of e-mail, as they started the use later. The probability of using e-mail to contact scientists, physicists was 1.2, with Botany 0.98 and least likely were Zoologists (0.21). There were substantial differences among the scientists

In order to study the professional use of e-mail, there were number of questions to indicate their likelihood for using e-mail for various professional tasks- like participation in conferences, meetings, writing letters to journal editors, submission of manuscripts, discussing proposals and submitting proposals with funding agencies like CSIR, DST, UGC etc.

Table 4: Use of e-mail for professional tasks

Professional Activities	Physics	Chemistry	Botany	Zoology
Participation in conferences	65%	50%	62%	43%
Attending official meetings	60%	48%	55%	36%
Submitting manuscripts for publication in journals	52%	37%	45%	32%
Discussing research outcome with other scientists	70%	40%	65%	20%
Discuss proposals with funding agencies	35%	22%	15%	12%

The data given in Table 4 reveals that Physicists and Botanists are more active in using E-mail for professional purpose.

In order to assess the percentage of publications with joint authorship during the last 3 years, the necessary data was obtained given in Table 5.

Table 5: Percentage of works with joint authorship

	Physics	Chemistry	Botany	Zoology
% of works with joint authorship	55%	35%	58%	20%
t-value	2.85**	2.01**	1.63**	0.58*

**** significant at .01 level of significance**

*** significant at .05 level of significance**

The study reveals that there is positive correlation between the e-mail use and collaborative works. The use of e-mail has significantly contributed to the productivity of the scientists.

4 Conclusion

The findings of the study reveals that there is significant relationship between the use of Internet (e-mail) and productivity of the scientists. Further the use of Internet has increased the collaborative efforts particularly in the field of Physics and Botany.

5 References

1. BRUCE (H). Internet services and academic work: An Australian perspective. *Internet Research*. 4;1994. p 24-34.
2. KERR (E B) and HILTZ (S R). *Computer mediated communication system*, 1982. Academic Press, New York.
3. WALSH (J P) and BAYMA (T). Computer networks and scientific work. *Social Studies of Science*. 26;1996. p 661-703.