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# **Utilization of Information Sources by the Biologists in Madurai Kamaraj University, Madurai: An Analytical Study**

By

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## **Abstract**

*This study revealed importance of information sources among the biological faculty members and research scholars of Madurai Kamaraj University. In this studies the relative importance of information sources among the biologist on the basis of statistical tests concludes that the personal attributes of biologists such as designation, gender, age, qualification, subject, experience, nature of work and nature of research in a university level have bearing on the use of information resources. The results show that position and education are good predictors of information use while professional experience has little power in explaining variations in information source use. The findings of the study support the notion that information source use is a result of complex set of interactions among variables. The examination of the interaction of some of the variables such as education, position, and experience provides insight in understanding the factors that influence the use of information sources. The study reveals that the Reprints/Prints, Abstracting and Indexing Journal, primary periodicals, Newspaper, Dictionaries, Subject Bibliographies and Monographs / Text books were the sources of information which were most frequently used by the largest majority of the biologists.*

**Keywords:** *Information Sources, Biological Science, Primary Journal, Geographical Sources Yearbooks, Research Report and University*

## **1. Introduction**

Information is broadly the recorded or communicated knowledge gained by human being through experience, observation, experiments and other means. It is the mankind's most valuable resource which has been playing a crucial role in building human civilization and

society in all spheres, social, economic, political, scientific, technological and so on. Information is an amorphous concept, less susceptible to a precise definition. Information is one of the major resources in the development of human beings and the world entirely. Information is of great importance to the society because it is essential in planning and decision making. Information is a critical resource that enables an individual or organization to function, flourish and take decisions. Information is an important tool in decision making. This indicates that information provides clues to the hidden facts and helps in providing necessary and reliable facts to a wise and reasonable decision for vocational, educational and socio-personal problems amongst other. Information need is a condition in which certain information contributes to the achievement of a genuine or legitimate information purpose. In the present study, an attempt has been made not only to identify the relative importance of different resources of information used by the biologists, but also to test whether the personal attributes of biologists have any bearing on the use of information resources or not.

## **2. Review of Related Literature**

Archana and Padmakumar <sup>1</sup>(2011) have discussed about the use of online information resources for organizing knowledge in library and information centers in Cochin University of Science and Technology. The paper discusses the status and extent of automation in CUSAT library. It was observed that 67 per cent users consult online resources for assisting knowledge organization. Library of Congress catalogue is the widely used (100 per cent) online resource followed by OPAC of CUSAT and catalogue of British Library. The main purposes for using these resources are class number building and subject indexing. Thanuskodi and Ravi<sup>2</sup> (2011) have identified that the Sources of information available via the Internet are increasing exponentially, leading to steady increase in the use of Internet for education and research. Since past few years, free online information sources like e-journals, e-books, e-databases have increased considerably. The study discusses utilization of digital resources by faculty and research scholars of Manonmaniam Sundaranar University, Tirunelveli. Results show that 67.14 per cent of the faculty is familiar with the use of digital resources, and majority of these members are using digital resources for research purpose. Shankar Reddy<sup>3</sup> (2010) has identified that the user studies help build need-based and balanced collections. A questionnaire was used to collect data about use of information sources by research scholars of Gulbarga University of Karnataka State. A majority of the research scholars visit the library daily, and most indicated that they visit

to use the Internet. Most found the collection inadequate to meet their information needs. Adithya Kumari and Talawar<sup>4</sup> (2009) investigated the use of reference sources, i.e., Bibliographies, dictionaries, encyclopedias, yearbooks & almanacs, geographical sources and handbooks through a questionnaire - based survey in seven university libraries of Karnataka. Results show an upward interest in reference sources among the users in university libraries. Dictionaries and encyclopedias are found to be the most used reference sources and geographical sources and directories are used less. Factors that may affect the use of reference sources are also discussed.

### **3. Statement of the Problem**

The present researcher has selected research scholars and staff members of the Biological science of Madurai Kamaraj University in order to analysis the use pattern of information resources. Since, Biological science research has become so dependent upon an effective information support system that it gets crippled in the absence of a good library. Therefore, the Biological science professionals play a very significant role in enriching the scientists and scholars by providing them with the latest information concerning their areas of interest. In this background the present study examines the use of information sources (between the research scholars and the faculty members of the Biological Science in Madurai Kamaraj University versus the personal attributes of scientists.

### **4. Objectives**

The objectives of the present study are:

1. To use and the awareness of information resources by the faculty members and research scholars of Biological science in Madurai Kamaraj University.
2. To determine the relative importance of different sources of information;
3. To know whether the personal attributes of biologists such as designation, sex, age, qualification, experience, nature of work and nature of research in a university environment have any bearing on the use of information sources or not.

### **5. Hypothesis**

For the purpose of this study, the following hypotheses have been formulated.

1. The personal attributes of biologists such as designation, sex, age, qualification, experience, nature of work and nature of research in a university level have bearing on the use of information sources.

## 6. Sample Selection

In order to study the Source of information used by biologists in Madurai Kamaraj University: An Analytical study has been chosen since only very few empirical studies relating to the use of information sources by the biologists in general is available. As there are many departments in this university, the researcher selected the faculty members and research scholars working in the Departments of Botany, Zoology and Micro-Biology. A total of 140 biologists were working in these departments and the questionnaire designed for the purpose was distributed to all of them. Out of which, 105 responded to the request with a response rate of 75%. The distribution of biologists according to their status both in the population and in the sample is shown in Table 1.

**Table – 1: Distribution of biologist according to their status both in the population and in the sample.**

Status	Biologists	
	In the Population	In the Sample
Faculty Members	35	26
Research Scholars	105	79
<b>Total</b>	<b>140</b>	<b>105</b>

It is evident from Table-1 that out of total population, 25 percent are faculty members and remaining 75 percent are research scholars. It is also obvious from it that 24.76 percent of the biologists in the sample are faculty members and the remaining 75.24 percent are research scholars.

## 7. Application of Statistical Tools

The following statistical tools are being applied to test the hypotheses

1. The Kendal coefficients of concordance (W) were applied to test hypothesis. The Kendal's coefficient of concordance symbolized by letter W is a measure of correlation between more than two sets of ranks. The formula is

$$W = \frac{S}{1/12 K^2(N^3-N)}$$

Where, W = coefficient of correlation;

S = sum of squares deviations from the mean r;

K = sets of rankings; and

N = number of sources which have been ranked

When the  $N > 7$  the significance of  $W$  is tested by converting its values into chi-square with the help of the following formula.

$$X^2 = k (N-1) W \text{ and}$$

The degrees of freedom (df) is always equal to  $(N-1)$  and calculated chi-square value is compared with the chi-square table value of 0.05 level of significance. If the chi-square calculated value exceeds the table value, then the value of  $W$  is significant and the null hypothesis is rejected.

2. The spearman's rank correlation coefficient was applied. The spearman rank-difference method symbolized by  $r$  (read as rho) for the correlation coefficient between two sets of ranks or between two sets of scores converted into ranks.

$$r = 1 - \frac{6\sum D^2}{N(N^2-1)}$$

Where,  $r$  = spearman's rank correlation coefficient,  
 $D$  = difference between rank<sub>1</sub> and rank<sub>2</sub> and;  
 $N$  = number of pairs of ranks / scores.

## 8. Analysis of Data

After collecting the data from the respondents the data was checked and analysed according to the objectives and hypotheses stated.

The primary data collections have to be processed and analyzed in accordance with the various steps such as editing, coding and tabulating.

## 9. Data Analysis and Interpretation

Biological literature appears in a wide variety of sources. Sources of biological literature can be identified by the type of sources and subject matter of sources. Sources of biological literature for all finds of specialized information are available in the library for biological research. Depending upon the nature of the job, the stage of the project, the urgency of the information or the availability of the information sources, the information seeking also varies from individual to individual. The present research examines the use pattern of information sources by biologists. The hypothesis is that the personal attributes of biologists such as designation, sex, age, qualification, experience, nature of work and nature of research in a university environment has bearing on the use of information sources. This has been examining by applying Kendal's coefficient concordance. The result furnished below:

## 9.1 Designation Wise

Table-2 shows the mean use score and the rank ordering of sources of information among the biologists versus their designation. The Kendal's coefficient of concordance ( $w=0.258$ ;  $x^2 = 32.25$ ;  $x^2_{\alpha} = 38.8$ ;  $df=26$ ;  $\alpha = 0.05$ ) showed that there is no significant relationship as to the rank ordering of different sources of information used by the biologists versus their designation.

**Table-2: Use of Information Sources by the Biologists: Designation**

Information Sources	Professors (UGC-BSR)(N=2) Mean use score (Rank)	Professor (N=5) Mean use score (Rank)	Associate Professor(N=9) Mean use score (Rank)	Assistant Professor(N=10) Mean use score (Rank)	Research scholars (N=79) Mean use score (Rank)
Primary Journal	3.00 (2)	3.4 (3)	3.11 (4)	2.5 (6)	3.01 (3)
Research Report	2.00 (4)	3.2 (4)	2.00 (10)	2.8 (5)	2.76 (6)
Conference / Seminar Papers	3.00 (2)	2.2 (6)	3.56 (2)	2.5 (6)	2.27 (12)
Patents	0.50 (7)	0.6 (12)	0.44 (18)	1.2 (14)	1.15 (24)
Standards	0.50 (7)	0.6 (12)	1.89 (11)	2.0 (9)	1.66 (19)
Trade Catalogue	1.00 (6)	0.8 (11)	0.67 (17)	1.2 (14)	1.61 (20)
Theses and Dissertations	3.50 (1)	1.6 (8)	2.56 (6)	2.8 (5)	2.77 (5)
Personal Contacts	2.50 (3)	2.2 (6)	2.44 (7)	3.1 (3)	2.21 (13)
Private Files	1.50 (5)	0.2 (13)	1.67 (13)	1.7 (2)	1.49 (21)
News Paper	2.00 (4)	1.8 (7)	3.11 (4)	3.1 (3)	2.71 (7)
Government Publication	2.50 (3)	1.2 (9)	2.00 (10)	1.9 (10)	1.92 (17)
Reprints / Preprints	3.50 (1)	4.0 (1)	3.78 (1)	3.6 (1)	3.53 (1)
Abstracting and Indexing Journal	3.50 (1)	3.6 (2)	3.33 (3)	3.4 (2)	3.38 (2)
Subject Bibliographies	2.50 (3)	2.8 (5)	3.56 (2)	3.1 (2)	2.68 (8)
Monographs / Text books	3.00 (2)	3.2 (4)	3.00 (5)	3.1 (3)	2.68 (8)
Dictionaries	2.50 (3)	3.2 (4)	3.00 (5)	2.9 (4)	2.81 (4)
Encyclopedia	1.50 (5)	2.8 (5)	2.33 (8)	2.4 (7)	1.82 (18)
Yearbooks & Directories	2.50 (3)	1.8 (7)	2.11 (9)	1.9 (10)	2.03 (15)
Geographical Sources	1.00 (6)	0.6 (12)	1.22 (16)	1.6(13)	1.24 (23)
Hand books and Manual	2.00 (4)	2.2 (6)	2.33 (8)	2.3(8)	2.33 (11)
Library Catalogue's	1.50 (5)	1.2 (9)	1.78 (12)	2.5 (6)	2.01 (16)
Bibliography of Bibliographies	1.50 (5)	0.8 (11)	1.67 (13)	2.8 (5)	2.03 (15)
Guide to Subject Literature	3.00 (2)	1.8 (7)	2.56 (6)	2.5 (6)	2.53 (9)
Institution Sources	3.00 (2)	1.0 (10)	2.11 (9)	2.3 (8)	2.37 (10)
Audio – Visual Sources	2.50 (3)	0.6 (12)	1.44 (15)	1.7 (12)	1.30 (22)
Library Personnel	2.00 (4)	0.6 (12)	1.56 (14)	1.8 (11)	2.11 (14)

$$W = 0.258 \quad x^2 = 32.25 \quad x^2_{\alpha} = 38.8 \quad df = 26 \quad \alpha = 0.05$$

## 9.2 Age wise

Table-3 shows the mean use score and the rank ordering of different sources of information among the biologists by their age. The Kendal's coefficient of concordance indicated that ( $w=0.4902$   $x^2= 36.76$ ;  $x^2_{\alpha} = 38.88$ ;  $df=26$ ;  $\alpha= 0.05$ ) there is no significant relationship as to the rank ordering of different sources of information among the biologists belonging to the different age group.

**Table-3: Use of Information Sources by the Biologists: Age wise**

Information Sources	<35 (N = 84) Mean use score (Rank)	35-45(N = 17) Mean use score (Rank)	>45(N = 4) Mean use score (Rank)
Primary Journal	2.99 (3)	3.06 (4)	2.75 (4)
Research Report	2.76 (6)	2.35 (9)	2.75 (4)
Conference / Seminar Papers	2.26 (13)	3.00 (5)	3.00 (3)
Patents	1.12 (25)	0.65 (22)	1.50 (9)
Standards	1.64 (20)	1.71 (16)	1.25 (10)
Trade Catalogue	1.54 (21)	1.00 (21)	1.25 (10)
Theses and Dissertations	2.77 (5)	2.29 (10)	3.00 (3)
Personal Contacts	2.24 (14)	2.65 (7)	2.00 (7)
Private Files	1.49 (22)	1.47 (18)	1.00 (11)
News Paper	2.75 (7)	2.65 (7)	2.50 (5)
Government Publication	1.86 (19)	2.00 (13)	2.50(5)
Reprints / Preprints	3.55 (1)	3.71 (1)	3.75 (1)
Abstracting and Indexing Journal	3.40 (2)	3.24 (2)	3.75 (1)
Subject Bibliographies	2.73 (9)	3.18 (3)	2.75 (4)
Monographs / Text books	2.74 (8)	2.82 (6)	3.50 (2)
Dictionaries	2.81 (4)	3.06 (4)	2.75 (4)
Encyclopaedia	1.86 (19)	2.41 (8)	2.25 (6)
Yearbooks & Directories	2.02 (18)	2.06 (12)	2.25 (6)
Geographical Sources	1.26 (24)	1.18 (20)	1.00 (11)
Hand books and Manual	2.36 (12)	2.18 (11)	2.00 (7)
Library Catalogue's	2.06 (17)	1.76 (15)	1.50 (9)
Bibliography of Bibliographies	2.08 (16)	1.65 (17)	1.75 (8)
Guide to Subject Literature	2.51 (10)	2.35 (9)	3.00 (3)
Institution Sources	2.38 (11)	1.88 (14)	2.00 (7)
Audio – Visual Sources	1.30 (23)	1.35 (19)	2.25 (6)
Library Personnel	2.09 (15)	1.35 (19)	1.75 (8)

$$W = 0.4902 \quad x^2 = 36.76 \quad x^2_{\alpha} = 38.88; \quad df = 26; \quad \alpha = 0.05$$



### 9.3 Experience wise

Table-4 shows the mean use score and rank ordering of sources of information among the biologists versus the teaching and research experience. The Kendal's coefficient of concordance ( $w=0.6218$ ;  $x^2= 46.63$ ;  $x^2_{\alpha} = 38.8$ ;  $df = 26$ ;  $\alpha =0.05$ ) showed that there is a strong relationship as for as the use of different sources of information among the biologists with their varied experience.

**Table-4: Use of Information Sources by the Biologists: Experience**

<b>Information Sources</b>	<b>Initial phase (N=45) Mean use score (Rank)</b>	<b>Middle phase (N=49) Mean use score (Rank)</b>	<b>Later phase (N=11) Mean use score (Rank)</b>
Primary Journal	2.98 (3)	2.88 (4)	3.55 (2)
Research Report	2.78 (6)	2.67 (8)	2.55 (7)
Conference / Seminar Papers	2.22 (12)	2.61 (9)	2.27 (8)
Patents	1.22 (23)	0.92 (24)	1.00 (18)
Standards	1.56 (18)	1.73 (19)	1.55 (14)
Trade Catalogue	1.51 (19)	1.39 (22)	1.36 (15)
Theses and Dissertations	2.87 (5)	2.59 (10)	2.64 (6)
Personal Contacts	2.38 (11)	2.18 (13)	2.64 (6)
Private Files	1.44 (20)	1.51 (20)	1.36 (15)
News Paper	2.93 (4)	2.78 (5)	1.81 (11)
Government Publication	1.87 (17)	1.94 (17)	2.00 (10)
Reprints / Preprints	3.53 (1)	3.63 (1)	3.64 (1)
Abstracting and Indexing Journal	3.40 (2)	3.33 (2)	3.64 (1)
Subject Bibliographies	2.58 (8)	2.98 (3)	2.91 (3)
Monographs / Text books	2.87 (5)	2.73 (7)	2.64 (6)
Dictionaries	2.98 (3)	2.76 (6)	2.73 (5)
Encyclopaedia	1.89 (16)	2.02 (15)	2.00 (10)
Yearbooks & Directories	2.07 (14)	2.00 (16)	2.09 (9)
Geographical Sources	1.33 (21)	1.22 (23)	1.09 (17)
Hand books and Manual	2.49 (10)	2.24 (12)	1.73 (12)
Library Catalogue's	2.22 (12)	1.84 (18)	1.64 (13)
Bibliography of Bibliographies	2.02 (15)	1.94 (17)	2.00 (10)
Guide to Subject Literature	2.71 (7)	2.31 (11)	2.82 (4)
Institution Sources	2.51 (9)	2.08 (14)	2.27 (8)
Audio – Visual Sources	1.29 (22)	1.41 (21)	1.27 (16)
Library Personnel	2.20 (13)	1.73 (19)	2.00 (10)

$$W = 0.6218; x^2 = 46.63; x^2_{\alpha} = 38.8; df = 26; \alpha = 0.05$$

## 9.4 Nature of Work

The use of information sources among the biologists and the nature of work is shown in Table-5. From the Kendal's concordance of coefficient ( $w = 0.3302$ ;  $\chi^2 = 24.76$ ;  $\chi^2_{\alpha} = 38.8$ ;  $df = 26$ ;  $\alpha = 0.05$ ) it was found that there is no significant relationship with regard to the use of information sources among the biologists by their nature of work.

**Table-5: Use of Information Sources by the Biologists: Nature of Work**

Information Sources	Teaching (N= 0) Mean use score (Rank)	Research (N= 75) Mean use score (Rank)	Both (N= 30) Mean use score (Rank)
Primary Journal		3.04 (3)	2.87 (7)
Research Report		2.71 (6)	2.70 (9)
Conference / Seminar Papers		2.21 (13)	2.90 (6)
Patents		1.09 (24)	0.97 (23)
Standards		1.61 (19)	1.70 (18)
Trade Catalogue		1.55 (20)	1.17 (22)
Theses and Dissertations		2.76 (5)	2.60 (10)
Personal Contacts		2.24 (12)	2.53 (11)
Private Files		1.48 (21)	1.43 (20)
News Paper		2.69 (7)	2.80 (8)
Government Publication		1.95 (17)	1.80 (17)
Reprints / Preprints		3.52 (1)	3.73 (1)
Abstracting and Indexing Journal		3.37 (2)	3.43 (2)
Subject Bibliographies		2.68 (8)	3.13 (3)
Monographs / Text books		2.68 (8)	3.07 (4)
Dictionaries		2.81 (4)	2.97 (5)
Encyclopaedia		1.79 (18)	2.43 (13)
Yearbooks & Directories		1.99 (15)	2.10 (15)
Geographical Sources		1.21 (23)	1.30 (21)
Hand books and Manual		2.31 (11)	2.27 (14)
Library Catalogue's		1.97 (16)	2.03 (16)
Bibliography of Bibliographies		1.99 (15)	2.03 (16)
Guide to Subject Literature		2.51 (9)	2.50 (12)
Institution Sources		2.36 (10)	2.10 (15)
Audio – Visual Sources		1.31 (22)	1.43 (20)
Library Personnel		2.11 (14)	1.60 (19)

$$W = 0.3302; \chi^2 = 24.76; \chi^2 = 38.8; df = 26; \alpha = 0.05$$

## 9.5 Nature of Research

The use of information sources among the biologists and the nature of research are shown in Table-6. There is a significant relationship regarding the rank ordering of information sources as indicated by the Kendal's concordance of coefficient ( $w=0.5858$ ;  $x^2=43.93$ ;  $x^2_{\alpha}= 38.8$ ;  $df=26$ ;  $\alpha = 0.05$ ) among the biologists by their nature of research work.

**Table-6: Use of Information Sources by the Biologists: Nature of Research**

Information Sources	Basic Research (N=29) Mean use score (Rank)	Applied Research (N= 42) Mean use score (Rank)	Both (N= 34) Mean use score (Rank)
Primary Journal	2.97 (3)	2.95 (3)	3.06 (3)
Research Report	2.55 (5)	2.69 (7)	2.85 (5)
Conference / Seminar Papers	2.21 (7)	2.48 (9)	2.50 (8)
Patents	1.10 (18)	1.26 (21)	0.76 (22)
Standards	1.41 (16)	1.79 (17)	1.65 (17)
Trade Catalogue	1.52 (14)	1.67 (18)	1.09 (21)
Theses and Dissertations	2.55 (5)	2.69 (7)	2.88 (4)
Personal Contacts	2.21 (7)	2.33 (11)	2.38 (9)
Private Files	1.41 (16)	1.52 (19)	1.38 (20)
News Paper	2.55 (5)	2.86 (5)	2.76 (7)
Government Publication	1.93 (10)	1.90 (16)	1.88 (14)
Reprints / Preprints	3.28 (1)	3.67 (1)	3.74 (1)
Abstracting and Indexing Journal	3.24 (2)	3.31 (2)	3.62 (2)
Subject Bibliographies	2.62 (4)	2.95 (3)	2.76 (7)
Monographs / Text books	2.55 (5)	2.88 (4)	2.82 (6)
Dictionaries	2.97 (3)	2.71 (6)	2.88 (4)
Encyclopaedia	1.79 (12)	2.05 (15)	2.00 (12)
Yearbooks & Directories	2.00 (9)	2.24 (13)	1.82 (15)
Geographical Sources	1.48 (15)	1.43 (20)	0.76 (22)
Hand books and Manual	2.21 (7)	2.43 (10)	2.21 (11)
Library Catalogue's	2.17 (8)	2.17 (14)	1.59 (18)
Bibliography of Bibliographies	1.89 (11)	2.24 (13)	1.79 (16)
Guide to Subject Literature	2.62 (4)	2.59 (8)	2.38 (9)
Institution Sources	2.24 (6)	2.29 (12)	2.32 (10)
Audio – Visual Sources	1.34 (17)	1.19 (22)	1.53 (19)
Library Personnel	1.69 (13)	2.17 (14)	1.97 (13)

$$W = 0.5858; x^2 = 43.93; x^2_{\alpha} = 38.8; df = 26; \alpha = 0.05$$

## 9.6 Gender wise

Table-7 shows the mean use score and rank ordering of sources of information among the biologists by their sex. The Spearman's rank order correlation coefficient ( $r=0.9431$ ;  $p<0.0001$ ;  $\alpha=0.05$ ) confirmed an extremely significant agreement among the biologists as with regard to the use of information sources versus sex.

**Table-7: Use of Information Sources by the Biologists: Male Versus Female**

<b>Information Sources</b>	<b>Male (N = 67) Mean use score (Rank)</b>	<b>Female (N = 38) Mean use score (Rank)</b>
Primary Journal	3.00 (3)	2.97 (4)
Research Report	2.61 (9)	2.87 (7)
Conference / Seminar Papers	2.45 (10)	2.34 (12)
Patents	1.07 (24)	1.03 (25)
Standards	1.66 (19)	1.58 (20)
Trade Catalogue	1.43 (20)	1.45 (22)
Theses and Dissertations	2.76 (4)	2.63 (10)
Personal Contacts	2.40 (11)	2.16 (16)
Private Files	1.42 (21)	1.50 (21)
News Paper	2.63 (8)	2.95 (5)
Government Publication	1.81 (18)	2.11 (17)
Reprints / Preprints	3.61 (1)	3.53 (1)
Abstracting and Indexing Journal	3.34 (2)	3.47 (2)
Subject Bibliographies	2.73 (6)	2.92 (6)
Monographs / Text books	2.75 (5)	2.84 (8)
Dictionaries	2.66 (7)	3.18 (3)
Encyclopaedia	1.96 (15)	2.00 (19)
Yearbooks & Directories	1.90 (16)	2.29 (14)
Geographical Sources	1.18 (23)	1.34 (24)
Hand books and Manual	2.15 (14)	2.55 (11)
Library Catalogue's	1.85 (17)	2.21 (15)
Bibliography of Bibliographies	1.96 (15)	2.08 (18)
Guide to Subject Literature	2.39 (12)	2.79 (9)
Institution Sources	2.27 (13)	2.32 (13)
Audio – Visual Sources	1.33 (22)	1.37 (23)
Library Personnel	1.90 (16)	2.11 (17)

$r = 0.9431$   $p < 0.0001$  (two tailed);

P value summary = Extremely significant  $\alpha = 0.05$

## 9.7 Qualification wise

The mean use score and the rank ordering of the different sources of information used by the biologists by their qualifications viz, Ph.D's and Non-Ph.D's is shown in Table-8. The Spearman's rank order correlation coefficient ( $r = 0.9365$ ;  $p < 0.0001$ ;  $\alpha = 0.05$ ) indicated that there is a significant agreement among the Ph.D's and Non Ph.D's as far as the use of different sources of information among the biologists are concerned.

**Table-8: Use of Information Sources by the Biologists: Ph.D's Vs Non-Ph.D's**

<b>Information Sources</b>	<b>Ph.D. (N = 66) Mean use score (Rank)</b>	<b>Non-Ph.D. (N = 39) Mean use score (Rank)</b>
Primary Journal	2.98 (3)	3.00 (4)
Research Report	2.65 (7)	2.79 (6)
Conference / Seminar Papers	2.51 (10)	2.23 (12)
Patents	1.15 (24)	0.89 (24)
Standards	1.85 (19)	1.28 (21)
Trade Catalogue	1.58 (20)	1.21 (22)
Theses and Dissertations	2.68 (6)	2.77 (7)
Personal Contacts	2.59 (8)	1.87 (16)
Private Files	1.51 (21)	1.38 (19)
News Paper	2.59 (8)	2.95 (5)
Government Publication	1.92 (18)	1.87 (16)
Reprints / Preprints	3.55 (1)	3.64 (1)
Abstracting and Indexing Journal	3.26 (2)	3.62 (2)
Subject Bibliographies	2.92 (4)	2.59 (8)
Monographs / Text books	2.68 (6)	2.95 (5)
Dictionaries	2.74 (5)	3.03 (3)
Encyclopaedia	2.08 (14)	1.77 (18)
Yearbooks & Directories	2.06 (15)	1.95 (14)
Geographical Sources	1.41 (22)	0.95 (23)
Hand books and Manual	2.21 (12)	2.49 (9)
Library Catalogue's	1.94 (17)	2.08 (13)
Bibliography of Bibliographies	2.12 (13)	1.79 (17)
Guide to Subject Literature	2.55 (9)	2.44 (10)
Institution Sources	2.30 (11)	2.26 (11)
Audio – Visual Sources	1.36 (23)	1.33 (20)
Library Personnel	2.00 (16)	1.89 (15)

$r = 0.9365$   $P < 0.0001$  (two - tailed);

P value summary = Extremely significant  $\alpha = 0.05$

## 10. Major Findings

1. Majority of the biologists were from the field of biochemistry (45.71%) and the rest from botany (22.62%) and Zoology (26.67%).
2. More than one – fourth of the biologists were engaged in teaching and research, while the remaining 71.43 percent of the biologists were engaged only in research.
3. The personal attributes such as qualification and sex have bearing on the use of information sources among the biologists.
4. The personal attribute such as designation, Age wise, Nature of work have no bearing on the use of information sources, while experience and Nature of research have bearing on the use of information sources among the biologists in a university environment.

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