


## Subject: Library and Information Science

Production of Courseware

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**Paper No: 10** Informetrics and Scientometrics

**Module : 03** Library Use Studies



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## **Unit- 3**

### **Library Use Studies**

#### **I. Objectives**

- To define library use and to correlate it to use of books and other reading materials
- To profile some useful studies on use of books, and library services
- To evolve the mode of change from book use to information use
- To highlight the aspects of information use
- To examine the advent of electronic information sources
- To study the available means for the compilation of usage data in electronic environment

#### **II. Learning Outcome**

After completion of this module, you will gain knowledge in the area of library use studies and various case studies; you may carryout independently user survey and use studies in your library

#### **III. Module Structure**

1. Introduction
2. Brief literary review on Use Study
  - 2.1 Library Use and Information Use Study
  - 2.2 Use of Electronic Information Sources
3. Use Studies in a changing environment
  - 3.1 Physical Environment
  - 3.2 Library Use Models
4. Information Use
  - 4.1 The Meaning and definition
  - 4.2 Differences in Information use
5. References

#### **1. Introduction**

The studies on Library use, user, user needs and studies centre don user are in active practice since 1930's. The philosophy of studies on library and library use can be viewed in the two intrinsic notes made by W.C.B. Sayers and Dr. S.R. Ranganathan. Sayers "advises librarians to know the habits, education and occupations of their 'people' (Sayers. ). Ranganathan on the other hand states "know thy books, knowthy readers and know thy self" (Ranganathan, )The two notes mean the importance of knowing the users and how they use the library and library resources. The first dimension of Use Study focuses on the Library use study. A library 'use study' defined as any study which deals with the use of the library, in any or all of its aspects, by its patrons or its staff (Tobin, 1974).

Secondly, the studies on information usage, user information needs, user information seeking behavior emerged with the shift of emphasis from 'book' to 'information' in 1950's. The information use study became one of the emphatic issues in the process of scientific communication. An extensive survey study on "how scientists acquire and use scientific information" is very well dealt by Meadows (Meadows, 1974).

Thirdly, in recent years, at least in the last one and a half decades with the growth of electronic sources of information, usage studies on electronic sources of information are becoming common. The digital information resources portals have included an inbuilt mechanism to track the use of electronic information resources by users across the globe. In the latter context some program packages are also developed to automatically compile data on the usage of electronic information resources especially under the consortia-based subscriptions to digital library resources comprising, e-books, e-journals and online databases, and a variety of other e-resources. So the study on use, user and user needs and user information seeking behavior have been accepted practices in the past and continue to be so to the present electronic information age.

## **2. Brief literary review on Use Study**

### **2.1 Library Use and Information Use Study**

The Library use studies are in practice since 1930's. It is stated by Tobin (Tobin, 1974) that "During 1930's, when libraries undergoing rapid and extensive expansion the most popular type of use study was the community survey. The paper further states "In this type of study, almost everything related in any way to the use of library was surveyed." Later, some routine activity parameters on library use studies were included such as; "studies on number of patrons' use of the card catalogue, needs of various age groups, kinds of reference questions asked and that were answered. The paper by Tobin made a survey of literature on Library Use from the articles indexed in "Library Literature" from 1960 to 1973. The books on "The Library Surveys" by Maurice B. Line (Line, 1967) were very famous and so even to this date; the Library of University of Bath where Line was a Librarian in 1968 regularly undertakes surveys of Library users to find out if library services are effective. The results of these surveys are regularly published in the website of the library (Line, University of Bath). The library use studies are the most extensive and probably also laid the foundation for the studies on use, user and users' information needs and information seeking behavior. However, Pankake laments on use study as "One of the impediments to the application of the findings of use studies lies in the limited definition of "use" (Pankake,). Therefore it is suggested that "basis questions on the different types of uses and how librarians and their communities value them need to be delineated.

The study on information use is the next stage of development. The shift in the focus from library/book to information and information services is attributed to the first landmark of 'User Approach' and study conducted by J.D. Bernal in 1948 (Bernal, 1948) the second in the context of information use study is by Shaw in 1956. (Shaw, 1958). Since there was a differential opinion on the meaning of the word 'Information' and the information professionals have slightly differed from concept of what they meant on the study of information use. Librarians have traditionally collected, organised and lent packages of material created outside of the

organisation. The emphasis on journals, books or reports written by scholars has led the librarians to equate the phrase “information use” the use of formal channels as well as information channels of communication. The studies on information need is embedded in the studies of users, use and uses when from one of the most extensive and amorphous areas of research studies on Library and information science during the last 4-5 decades.

## **2.2 Use of Electronic Information Sources**

The scholarly communication is steadily going ‘electronic’ and therefore a good deal of discussion on the subject “decline of library usage” is growing with widespread access to and availability of born digital information. Since the mid 1990s, the declining trend in traditional library usage has been referred in Wikipedia (e.g. wiki.)It is stated that the great advantages of electronic publishing has been the facility to collecting usage data(van Dyck and Mckenzie).But on the usage of the resources as a mandate from the management, the e-publishers have included a mechanism on compiling the usage data automatically to each of the e-resources web-portals. So now there is an embedded mechanism or facility to find out the usage of electronic resources from their portals.

So, the three dimensions of Use Study – Library Use, Information Use and Use of Electronic Information Resources (Digital Library) are presented in this chapter.

## **3. Use Studies in a changing environment**

The use studies are not new and they had been in vogue informally in the beginning and have subsequently been formalized by library surveys, understanding use of information by specialist readers and the electronic information era has brought in the practice of collecting usage data automatically from the Online and Web-based information systems. So in this context the categories of use studies range from libraries to information and now the use of electronic resources.

In continuation to the discussions made in the previous sections, it implies that, taking into consideration of the changing library and information environment, the discussions on use study can be looked from the following angles. They are as follows;

- Physical Environment – Referring to Library and Information Use Studies
- Electronic Environment – Use of Online and Electronic Sources

These can be further extended by

- Use by different categories of users – by ordinary user, by category of users, by researcher
- By type of library; and
- By different types of materials and services

In this context under each of the above categories let us study, the purposes, methods and the resultant factors of Use studies in them and some measurement techniques employed to study and evaluate the Use in the situations .

### 3.1 Physical Environment

Two of the Five Laws of Library Science interestingly consider the importance of “use” by the readers. The first law ‘Books are for Use’ and the second law ‘Every Reader His/her Book’ inherently implies the use of book and also fulfilling user information (book/library) needs. The philosophy of the first law is to promote use and it has shifted from old adage, ‘preservation for posterity’. The law propagates to replace original adage “Books are for posterity” to “Books are for use”. The second law connotes “Books for all” without distinction of user community. As already mentioned library use studies are in vogue since 1930s and Tobin (Tobin, 1974) has made a survey of literature published and indexed in Library Literature. However the Library use studies have been of interest to researchers as well to the librarians. The case of University of Bath commenced by Line is the best example of continued interest in Library use study. Further, Ravichandra Rao (Rao, 1981) has put across cases, modes and models of library use study as his research output. The library use studies involved the study of different types of libraries, Public, academic and special libraries, the user groups, type of library usage – like use of different types of materials, use of facilities and aids; Library catalogue, bibliographic tools and services. The circulation transactions was main source of data employed in these studies and mostly emphasized on acquisition, collection, use and evaluation of collection and the different types of users and their needs. The main purpose was to study the effectiveness of the library and its services to the community and/or users.

In this category use studies relating to a) Library Use studies and b) Information use studies will be discussed.

#### a. Purpose

It is already pointed out by Tobin that use studies in particular in USA go back to 1930’s. It is further emphasized that the purpose was to **“increase the effectiveness of the use of the library by its patrons”**. In this context the concept of “library economy” a nomenclature prevalent in the 1930’s has been paraphrased to the economical and effective use of the library and its resources, even though it focused on the organization and administration of the library to that effect. However it was not until 1960’s that use studies were shifted from community surveys to library use studies. So the purposes of library use studies were;

- To increase the effectiveness of the use of the library by its patrons
- To improve the existing conditions within a particular library
- The use studies mainly used for internal and private purpose

In this context a very comprehensive treatise on Library use studies by Tobin can be one of the best sources which made a literature review on this subject by the survey of the articles published in Library Literature between 1960 1972. The survey with 477 titles shows highest number of

them (293, 61.42%) from USA, second position is held by UK with 17.82%. From India only three articles (0.63%)\* were published during the period of survey.

In this context the types of parameter and sources adopted in use study are:

- Library circulation records
- Catalogue use study
- Use of Xerox
- Usage of Television and by;
- Public, Academic and Special Libraries.

The purpose of use studies is also to;

Improve the existing conditions within a particular library and vast majority of use studies were used for internal and private purposes.

\*(Pl. Note: There might be a small margin of data error factors in the survey, mainly the lack of coverage of the Indian sources in the Library Literature.)

## **b. Objectives**

There are various studies on the use of libraries (in particular the collection) and information. It is stated that “An ultimate measure of the quality of a library service is based on the extent of its use”. (Ravichandra Rao). There are number of studies conducted on this subject, they are concerned with the types of users and the degree to which users needs are satisfied. The objectives of these studies are;

- To make a careful and intensive study of the library situation
- To measure the adequacy of a library collection for present and possible future library progress
- To discover mathematical models for pattern of library use, in relation to different types of uses and in relation to different types of documents

## **c. Methods of use studies**

Tobin has suggested different method to conduct use studies. They are;

- Questionnaire survey
- Operation Research

The survey of usage data are considered on the parameters like Number of books, Equipment available, qualifications of library staff etc. Most of these studies were on a single library and not for a group of libraries. Ravichandra Rao states “Methods used in library use are used for collecting data (Ravichandra Rao, 1981). They also included Periodical visits, check lists, library statistics, correspondence and interviews are also used in various combinations”. There are some observed deficiencies in library use studies due to;

- Lack of scientific approach in data collection
- Varying methods of data collection
- The scales of measurement are ill-defined

#### **d. Metrics of Library Use Studies**

The measurement and evaluation of library use has to be extensively attempted in to understand various elements, benefits and methodologies of library use studies. The common practice to gather data on library use (visit) has been on maintaining a gate register to record the entry to the library by the customer. This is used mostly to present the statistics for the Annual Report of the organisation if sought from or to present the same at the time of visit of peer team for assessment and accreditation. But this is not reckoned for the evaluation of the effectiveness of the library use or of its services to its clientele. On the other count the circulation statistics is also maintained by the libraries, by the number of registered borrowers but not by number of circulation transactions, which is used again when mandated by the authorities.

As it has been the case most of the library use studies were for single library and for internal purposes, so there are no generalized methods and results to evaluate the library use. In most of the cases of the library use studies, measuring the public libraries are more common than other types of libraries, might be for the simple reason that the public libraries have a mixed-cross section of users and their heterogeneity characteristics. In attempt to searching measuring library use some two studies are noticed and are presented here.

One of the popular modes of study of library use is by means of collection and analysis of circulation data. The statistical distribution of circulation data is by; volume of use by type of documents, and by type of user and then use of documents of different age, seasonal variations in transactions etc. Libraries normally consider that circulation data revealed by the transaction records of documents borrowed could be taken as an indicator of the use of library materials.

It is found that, the analysis of circulation data based on characteristics of user and documents might give a picture of a library use and further the following types of investigations are possible for the analysis of circulation data.

- The pattern of relative frequency distribution of documents in the collection in a given period of time, and
- The proportion of the circulated documents to the total collection of the library.
- It may a directional approach for collection development
- The in-house library use study.

#### **e. Case Studies on Library Use**

Some cases of the above pattern are presented below:

Mukherjee has made some attempt to present a statistical approach with regard to the use of public libraries in relation to expenditure. The study sample is public libraries from USA and Britain. He states “evaluation of library services is a very difficult task”. Some minimum standards will have to be achieved before this can be undertaken. Normally the quantitative measure of the use of the libraries is made by; (a) the gate register maintained at the entrance of the library and (b) the circulation of books (borrowing). The study of American Public Library use has been attempted by the author. It shows a “correlation between the volumes per capita held in public libraries for the population served in the different states of the country and their per capita circulation”.

The author has statistically worked out the Coefficient of correlation between the circulations per capita against number of volumes per capita using this following formula.

$$r = \frac{\sum xy}{\sqrt{\sum x^2 \cdot \sum y^2}}$$

where x = Circulation per capita and  
y = volumes per capita (of population)

Further, in order to test the significance of the observed correlation the following formula is used.

$$t = \frac{r}{\sqrt{1-r^2}} \cdot \sqrt{n-2} \quad (n \text{ being number of pairs of observation}).$$

It is concluded from the study of twelve (12) public libraries of United States that the correlation is significance and that a correlation exists between per capita circulation and per capita volumes in the public libraries. A comparative study between British and American public libraries has been made by the author and statistically shown that the British public library user (read) more books than American public library user.

The study has also made an attempt to compare the per head expenditure on public libraries in two countries. It has also highlighted that “financial support is one of the major factors in the healthy growth of the libraries”. It is argued poorly supported library will have fewer book acquisitions, a smaller and less competitive staff, resulting in poor service and consequently less library use.

A comparative study as already mentioned from two countries is attempted on “per capita expenditure” between British and American libraries. The calculation of common Standard Deviation “S” of both the countries and “t” is calculated using the formula;

$$t = \frac{(M_1 - M_2)}{S} \cdot \sqrt{\frac{n_1 n_2}{n_1 + n_2}}$$

Where  $M_1$   $M_2$  is Mean (of two samples) per capita Expenditure in America and Britain and  $n_1$  and  $n_2$  are the numbers of observations of the two countries. The result has been significant



for 15 degree of freedom. It is concluded from the study that “per capita expenditure in American Public Libraries is greater than the per capita expenditure in Britain public libraries.

Note: The study data is of 1963 and the details are taken from the Mukerjee paper referred at the end. The formula and the results are furnished to demonstrate the methodology used and not to highlight of differences between the two countries.

### **A case for India**

The study can be very well attempted in the Indian public library context. It is now well known that as many as 20 States of India have enacted the Public Library Legislation and it would be as invaluable attempt to test the two factors – the public library use and the public library expenditure in the states. Further this can be attempted very well with the significant variations in the literacy rates of the states of India. It can be highlighted here that no such studies have been attempted so far in the context of Public Libraries in India, focusing on per capita volume of books and per capita circulation data.

Another case study on measuring library use has been made by Zweizig. The author makes a very significant statement on measuring the library use in the following words. Quote;

In the flow from acquisition to organization to use of materials, the demand for accountability increasingly centres on the end of the process where **use** occurs. This new focus presents a special challenge, for it is here our present ability to measure is weakest”.

It is also emphasized by the author that “Libraries along with other publicly supported agencies, are being asked with increasing frequency to show how they contribute to their supporting communities. It is in this context the measuring the library use at all times even in the present electronic environment counts.

It is observed by Ravichandra Rao that “very little work has been done in the area of “In-Library Use” and describes the study of McGrath who has made a study of in- library use. The method of in-library use consisted of ‘books left on tables, chairs, desks and in other areas of the library (McGrath, ).

The study by DeProspro measured the effective circulation per use, effective user hours and effective equipment use. DeProspro study also developed indices of use that could be usefully compared across different types of libraries. He formulated the “effective circulation per user” (EC) as follows:

Let EC = Effective Circulation per user

U= All persons entering the building (library) accounted for 1500

U<sub>B</sub> = All persons checking out material for use outside the library  
(Books borrowed for home use) accounted for 500

C<sub>1</sub> = Total inside circulation (used within the Library) accounted for 760

$C_O$  = Total outside circulation accounted for 1500

$$EC = (C_O/U_B) + (C_1/U) = 3.5 \text{ i.e. } (1500/500) + (760/1500) = 3.5$$

The above two studies by Hamburg and DeProsper as reported in Zweizig have highlighted the problems and differences in measure of use. These do not include any promotional activity used by the libraries. It is mentioned that the library use data alone cannot be used for seeking the public support.

In another incident of 'in-library book usage' Hindle and Buckland brings out a relation between 'in-library use of books and their circulation'. In this context it is stated that "the measure of library use is focused on the activity (services) of the system (library). The measurement of use is ideally focused on the "transaction of materials as the unit of analysis". The measures include "number of books circulated, number of interlibrary loan request fulfilled and number of reference queries answered". These are obviously the common parameters of measure of library use. As the circulation and reference transactions are not clearly defined, as they are merely transactions (physical) and not attempt to view the use. To overcome this lacuna Hamburg and others have provided more meaningful measure of use. They developed the measure of document exposure time without increased cost implying increased effective use. The document exposure meant here is to find out the "the amount of time actually spent in reading the circulated book". The document exposure time statistics was also developed for material used in the premises of the library and not for the materials circulated. So alternatively another study was proposed to overcome this error.

The above case studies can be applied to measuring library use, might be from public, academic and special libraries.

### **3.2 Library Use Models**

There are quite a good number of use models discussed by Ravichandra Rao, The proposals of McGrath on matching the class numbers of books with teaching programme, Buckland study on book availability and library use and New and Ott study on the analysis of inter-library loan and presented here in brief.

McGrath (McGrath, 1972) matches the Class numbers of books to the to the subject profiles of teaching programmes. He uses LCC and DDC numbers to assign to the courses. The match between the class numbers of books and the class numbers of teaching programmes reveal that, the class numbers of books which match with the course class numbers are more likely to be charged out than left on tables. This empirical study, he suggests is useful and also successful in visualizing the future circulation pattern. Apart from this he used the characteristics of subjects as life-oriented and non-life oriented and made a test. He considers Humanities and Social Sciences as soft subject and sciences as hard subjects and tests the following three hypotheses:

- The softer a subject, the more are charged out books on that subject, the harder the subject, fewer books are charged out.

- The purer subject books are more charged than more applied subjects
- The subjects characterized as life-oriented are charged more than the books characterized as non-life oriented.

He examines and tests the hypotheses with relevant data.

Buckland (1969, 1975) in a study discusses the book availability and library use and also distribution of demand over titles and also over time. He assumes that these two distributions follow Bradford and Poisson distribution respectively. In fact he assumes that the probability distribution,  $p(x)$  where  $x$  represents the number of requests being made in a short interval, follows Poisson distribution. He develops four hypotheses as listed below:

- For any given loan period, the chance of a document being on the shelf when sought varies inversely with its popularity, and 'popularity' is difficult to define.
- For any given popularity, the length of the loan period and the immediate availability are inversely related.
- For any given level immediate availability, the popularity and the length of the loan period are highly interrelated
- By increasing the number of copies availability or by shortening of the loan period, the immediate availability is increased.

Buckland developed these hypotheses on the basis of his study conducted in the University of Lancaster Library.

New and Ott (1974) use the inter-library loan transactions in their study and analyze 1434 inter-library loan requests from Fullerton Library in California State University. The period of loan requests covered was from 1st July 1971 to 31<sup>st</sup> July 1972. By analyzing the loan requests and for each department and also for each subject, frequencies of requests were obtained.

The study reveals a wide range of departmental inter-library loan requests and the frequency of periodical titles requested, and significant variation in classification of books requested. They suggest that the distribution of inter-library loan "periodical requests" follows a Poisson distribution.

The details of analysis and the description of the three models presented here can be referred from the book by Ravichandra Rao.(Ravichandra Rao, 1983)

## **4. Information Use**

### **4.1 The Meaning and definition**

As already mentioned the information use and user was initiated in the late 1940's by Bernal. That beginning was made to undertake several studies on information use. These studies particularly focused on how scientists spend their time.

The meaning of the word information differs among the information professionals and therefore each has a slightly different concept of which they are diagnosing when they study information use. The difference between library use and information use is considered as to their specific functions. Librarians have traditionally collected, organized and let packages of material created outside of the organization. This emphasis on journals, books or written by scholars has led to the librarian to equate the phrase 'information use' with the use of formal as well as informal literature. The phrase also refers to the use of either the reports or the data contained in databases.

#### **4.2 Differences in Information use**

The types of information acquired and used by the scientists fall under two categories – a) factual data and b) conceptual information. The extent of use of the two types of information differs from field to field even in areas of sciences. For instance, factual data are less used by mathematicians whereas chemistry scientific community uses this information to a great extent. Information use in the business environment is diagnosed by Hale (Hale, 1986). It is stated by the author that, information use in the business environment is influenced by the a) environment, b) the roles the administrator/manager plays and c) the personal characteristics of the manager.

##### **a. Purpose**

Identification of how information is used in a given setting is essential for three purposes:

- Designing appropriate new information systems and services
- Optimizing the allocation of operating resources by customizing services to selected clientele
- Fine tuning the delivery of information within existing systems

##### **b. Objectives**

The main objective of information use studies are on the planning and design of information services and products in order to meet the users' anticipatory and on demand information needs. The study of user information needs are also employed in the design of information systems at different levels of operation; National, Regional and International. The extended approaches of information use are to study the users' information needs and to information seeking behavior.

##### **c. Methods of study of Information Use**

Ideally, information professionals design and deliver information services based on knowledge of how potential clients use information. Information professionals tend to agree, philosophically, that diagnosis is the ideal first step in the prediction of information use. There several traditional and improved methods of study of information use by the patrons are employed. The survey method is employed for the study of information use by the scientific community. This adopts several common tools.

The questionnaire is one of the common tools employed in the collection of data the pattern of use of information (information sources) namely formal and informal channels of communication. The tools like observation, reference interviews are the other additional methods employed in the study of information use. One of the later method employed to study the pattern of information use by the patrons is by the citation studies, which measured the types of information sources used. The use of the channels of communication is also employed as one of the methods of data collection for the types of sources preferred by the scientists.

#### **d. Metrics of Study on Information Use**

It is often characterized that the term information is very ambiguous and its meaning not well defined. So the measurement of information use cannot be expressed in absolute terms are figures. The study of information communication can be one of the modes of study of information use. It can be a measure of difference between the amount of information delivered and its subsequent use which is difficult to measure. The measure of information use is rather more on primary sources than secondary or tertiary.

There are some congruent factors by which information use by scientists are measured. They are “what fraction of their working life scientists spend on information related activities”? The related activities include; information gathering, browsing, is searching the number of journals referred in their fields of study and so on. However there are differences among science scientists and social scientists and also scientists working in universities, industry and government establishments. “Line (Line,1970) has proposed a list of 15 personal characteristics that affect usage; these include, for example, the age, his/her seniority, his/her research experience and whether or not he is a member of a team “. It is further said that “scientists at government establishments appear in terms of information usage to be more like scientists in industry than in the universities.

The measurement of information use therefore consists of a set parameters; like time spent in information gathering, browsing and/or scanning journals, searching and reading the abstract and ultimately reading the full article if it is useful to him/her and he/she is fully satisfied with all these indicators. It is also examined the way scientists use sources of information - formal and informal sources of information.

It was estimated that scientists scan about 3000 articles per year and read about 10% them in detail – but there are variations from individual to individual. Bernal found that average number of journals consulted by a scientist is in the range of 5-15 and Shaw has pointed out that on an average about 20 minutes are spent on reading. The literature used by scientists, it is also found to be mainly from the primary sources of information and among which 70% are journals.

After a brief review on the measurement information use it can be finally concluded that, by several surveys conducted on the use of formal and informal channels of communication that; the intrinsic value of any information channels has little or no bearing on the frequency with which it is used. Nevertheless, it is firmly believed that many scientists regard personal discussion/communication as the essence of scientific communication – per se information use.

## **Electronic Environment**

With the rapid expansion of the internet to the general public, people began to seek answers in the quickest and most convenient way. It is estimated that 30-40% of entire scholarly communication (journals primarily) is now available in digital or electronic form. There is a gradual shift to electronic resources and many scholars and librarians are predicting about the slow disappearing act of a centralized resource location in the form of physical libraries, Many academics are apprehensive about the loss of a common culture of library use within the campuses and communities, while others hailing the era of digital library with a new structure of knowledge and practical use. There has been a move to make the library seem more than a tool and storage house for books and information as different programs are offered this is a huge transition from the traditional image of the library. This brings to era of new publishing trend – electronic publishing in the form of aggregators, consolidator and service providers.

It is continued to be practiced on the use of electronic information resources, by compiling their usage data automatically on a particular domain or a digital library consortia. The usage of licensed or subscription based electronic materials has grown dramatically. The technology brings-in shared access to electronic information and many libraries discontinued to direct subscriptions to many primary sources of information like, periodicals, reports, monographs, standards and so on. This brings in the era of ‘digital library consortium’ and parent organization directs the libraries to participate in the consortia model to subscribe to e-resources as an economic model and with an enhanced number of subscriptions. For instance, the EBSCO has come out with a package termed as “SUSHI” on the usage data collection. The COUNTER - Counting Online Usage of Networked Electronic Resources another such measure standard was launched in March 2002. It is an international initiative serving librarians, publishers and intermediaries by setting standards that facilitate the recording and reporting of online usage statistics in a consistent, credible and compatible way.

All this has now necessitated compiling and computing usage data by the publishers, libraries and other vendors and consumers and to the extent by institutions and individuals too. The electronic publishing industry for the benefit of the customers and other mandatory requirements have made arrangements for the collection of usage data and it is considered to be one of the important advantages than the traditional methods to determine the frequency of use of journals. In electronic environment it can be precisely to determine “how frequently, when, where by whom licensed content is used. But for the effectiveness of usage data, it can be used both by publisher and librarians to take some economic (budgetary) and editorial (publishing) decisions. There is a very distinct case that the usage data has helped to find out that usage of e-journals, cost-wise initially would be high and as more and more journal go electronic then the cost would get reduced considerably. It is a phenomena experienced y all that cost of electronic and

computer accessories has come down drastically as the usage of these gadgets increasing alarmingly.

## **Purpose**

The purposes of use study on Electronic information sources are many. As the 'library' is entering the virtual domain, the visibility of use of information resources is undeterminable. The growth of electronic information resources has made libraries to be more dependent on them, especially e-journals and e-books. Another important issue that demands the study of electronic information sources is that to understand the use comfort levels in using the new media. There are several trade issues relating to the publishers as well as to the libraries, especially pricing of information available via networked access. So these are some of the prerogatives which have necessitated the study of use of electronic information services.

## **Objectives**

The primary objective of study of use of electronic resources is from the angle of institutional benefits and conversely to manage the growing information needs which are become diverse day by day. Another important objective is to do some sort of cost-benefit analysis to use the electronic information sources, particularly selection of mode of access to the resources, as publishers of electronic information have been offering several pricing models.

## **Methods of study**

One of the common methods adopted in the use of electronic information resources is by using questionnaire method. It also includes to assess the awareness level of the customer to the new media, study the satisfaction of the use and also to do a comparison between the print and electronic media. The studies supplement with the additional parameters like the infrastructure facilities available for the use of electronic information resources and so on.

## **Metrics of Use of Electronic Information Resources**

### **Tools used in the measuring E- Resources**

As already mentioned, the e-resources portals have embedded tools and software to compute usage data at different levels – by institutions and by individuals. The institutions of higher learning and universities world over in large numbers, in consonant with the trends of growth of electronic information resources, are acquiring and putting into use these resources. There are new category of information systems and service providers to the e-resources like aggregators, consolidators, database developers and vendors who are gradually replacing the online information retrieval systems and other information systems. The bibliographic reference databases of journals (viz. Abstracting and Indexing services) and other primary sources of information are gradually being replaced with full-text journal portals of publishers, aggregators and others. So all over the world, digital library consortia of e-resources are formed to access and share the resources among the institutions. In line with these developments publishers have built a mechanism to measure the use of E-resources. Some of the these tools are;

### **i. COUNTER – Counting Online Usage of Networked Electronic Resources**

COUNTER as an international programme for librarians, publishers, vendors and even the customers who are front end beneficiaries was launched in March 2002. It sets standards of recording and reporting the online usage statistics in a consistent, credible and compatible manner and in the first phase its introduction in 2003 covered journals and reference databases. In the second phase the introduced in 2006 the coverage of the COUNTER operation was extended for online books and reference works. It issues codes of practice for the consistent process of collecting usage data with much credibility and justification. Today body of COUNTER usage statistics has been and a well accepted mechanism which has been adopted by vendors who have compliance with the COUNTER Codes of Practice. The usage statistics has implications in bibliometrics and scientometrics studies and with addition of additional parameter of citation count, self citation and co-citation, the computation of journal impact factor and h-index is being implemented by many database vendors like SCOPUS and Web of Knowledge and including the Google Scholar.

The COUNTER in addition to above, issues usage reports periodically and has been doing research in collaboration with UK Joint Information Systems Committee. The ACM Digital Library has been issuing COUNTER III compliance usage reports useful to the librarians for evaluation.

### **ii. SUSHI - Standardized Usage Harvesting Initiative**

Another tool to compile usage data online is SUSHI by National Information Standards Organisation of USA. SUSHI enables a library to gather their usage statistics across multiple publisher platforms without having to log into each search and compile usage statistics manually.

COUNTER has also worked with SUSHI to develop a protocol to facilitate the automated harvesting and consolidation of usage statistics from different vendors. This protocol is now available and may be found on the NISO/SUSHI website

### **f. Benefits to the E-publishers**

In the case of e-environment the usage data can and do inform publishers about the appropriate decision on the extent of going electronic. Trend in usage indicate subject areas in which research is evidently headed, and this can lead publisher to anticipate growing demand. Publishers can use these data as a factor in deciding subject areas in which to expand their publishing activity. Usage data tell publisher how user access information given a variety of access points. There are differences in downloading of papers. The utility of the downloaded information cannot be measured available statistics, so usage must be considered within the context of other terms and conditions set by the publishers.

In case of some of the thrust areas of research such as medicine and life sciences, usage data help mad decisions about the scientists and their requirements of content of primary periodicals. It is observed from a study that ‘a highest proportion of use or seek full text papers for which they



might have obtained the details from abstracting and indexing periodicals in respective areas of research.

Another facet of usage data in the electronic environment is about the pricing of electronic information. It is speculated that library managers want to know the cost of articles in journals and electronic content are evaluating their collection in new ways, and make to bargain with the publishers to supply of information. Publishers are also using these data to make their decisions about supply of electronic content to the users (libraries) and decide on different pricing models – pure usage and hybrid usage and by subscription. The pure pricing for example goes by “access to content” and the users would pay ‘as they go’.

#### **g. Pricing Models:**

Another benefit of utilizing the usage statistics is to set patterns of usage, preferences of libraries, institutions and even individual customer. The following are some of the pricing options derived from the usage patterns identified through the statistics compiled and analysis to set the preferential option/s of the customer.

- i. User pays for the article/s he/she has downloaded. The publisher charges a flat rate in this case without recourse to the source journal status and cost.
- ii. The customer is ready to forego the subscriptions to the publishers of journals and might go for the delivery of the content on the basis of need (On demand by the customer)
- iii. On the other hand libraries rely on ‘just in time’ method for serving the user only with the content when required by user, and get it by Document Delivery Service, Interlibrary Loan or from the publishers themselves via pay-per-view arrangement.
- iv. Price variations depend on the relative value of the content to the customer.
- v. Pay a fixed fee to have access to selected or all content a publisher offers for a limited period of time
- vi. Some of these issues and options also apply to the back files of journals which are also available in digitized form, as the libraries/librarians are also interested in back files of quality journals.
- vii. The publisher reserves the right to offer the content –granular elements of the content like paragraphs, pages, diagrams, figures and even the data might be given a restricted access and download.
- viii. There is an alternate method for full subscription and pay per article method, which is termed as ‘hybrid approach’ in which a library could pay a set of subscription for accessing to some titles and at the same time buy access to unsubscribed content on need base.
- ix. The rule of 80:20 may also be suggested in some selected cases.

## **h. Other patterns of Use Studies**

So far a discussion on the Use Studies and their conduct and benefits has been assessed in the context of three different contemporary developments of library and information systems and services. In addition to this there are some surrogate elements related to each of the three environments. They are;

- Use by different categories of users – by ordinary user, by category of users, by researcher
- By type of library; and
- By different types of materials and services

It is found that each of the above three variables are interdependent as the users fall with the type of library and information systems. For instance a generalist reader normally is a client at a public library a specialist in a special library and a researcher from an academic library. So the uses also vary in these cases. The use of different materials and services is also a relative issue in case of public, academic and special libraries, as public library use might be more with books whereas in case of academics it might be journals and in the context of special libraries the dependency is more on standards, patents and reports.

From the several studies conducted on use of libraries, it is found that use studies are more in the case of special libraries and then academic and finally the public libraries.

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