CHAPTER - I
INTRODUCTION

1.1 Preamble

The inherent complexities of science and technology in recent years have caused most countries, universities, and research institutions to face difficulties in finding the right human resources and enough budgets for their research projects. One of the results of these complexities is that solo, individual researches are being replaced by collective research attempts in many disciplines such that scientific collaboration has become one of the most important social mechanisms in recent research projects. Newman believes that useful and effective sharing of viewpoints, specialization of scientific disciplines, multi-discipline studies, increasing of research costs, and political factors all played important roles in increasing the level of collaboration between researchers. The result of this collaboration is that in order to complete their research, many scientists collaborate with their peers in other organization, disciplines, and even other countries. One of the most tangible forms of this collaboration is co-authorship, which can be seen in articles published in any technical and scientific journal nowadays (Newman, 2004).

Authorship trends and collaborative research are important facets of informatics studies. The authorship pattern one of prime aspects of Bibliometric analysis mainly deals with the kind of authors nature and degree of collaboration among them and collaborative trends of authors.

Multiple authorship has been a characteristics features of the social and there has been consistent trends towards increased collaboration in all the branches of social science collaboration and them work are among the most important necessities sociological work today. In recent period there is a trend towards collaboration in research in almost all pure and applied science and it is different from one subject to another. Twenty first century has been collaborative research trend among scientist working in groups within and across the geographic natural science and multidisciplinary area to make significant advances and break through, as stated by marring.
Bibliometric is a set of techniques devoted to the quantitative analysis of scientific and technical activities. These techniques implement statistical and mathematical tools to measure the data that measure researcher contribution to science and technical development. The data used for bibliometrics studies mainly stem from information produced by the activity of researcher communication. These quantitative studies of researcher communication activities trend to have a better understanding of phenomena of construction, dissemination and use of scientific and technical knowledge. Bibliometric is consider as a standard tools of science policy and research management in the last decades. All significant compilation of science indicators heavily rely on publication and citation statistics and other more sophisticated bibliometrics techniques. The aim of Bibliometric studies was measure national research performance in the international content or to describe the development of science field with the help of Bibliometric means.

Today Bibliometric is one of the rare truly interdisciplinary research field extend to almost all scientific field. Bibliometric methodology comprise components from mathematics, social sciences, natural sciences, engineering and even life sciences. Both Bibliometric and Scientometrics are a set of methods used for measuring the production and dissemination of scientific knowledge. De Solla Price and VasilerichNalinov were the originators of the discipline, which they developed for the purpose of providing research tools to historians and sociologist of science. The present study focuses informatics studies of the subject of digital Libraries in in Library and Information science Abstract (LISA).

1.2 Definitional Analysis

1.2.1 Authorship Pattern

In this era, people and scientists are turning towards the information and technology. Information and technology (IT) relates with the research. Scientist are trying to write jointly than the single. Single author, joint author, more than two or three author is authorship pattern. Which types of author is writing, whether it is single, two authors, three author or more than three authors is called authorship pattern.

1.2.2 Library and information Science Professionals

In the present study Library and Information Science Professional means the authors who has written articles in various publications covered under LISA
Library and Information Science Abstracts (LISA)

LISA is an international abstracting and indexing service designed for library professionals and other information specialists. LISA provides bibliographic information about past and present developments in librarianship, information science, online retrieval, and publishing and information technology. This database covers around five hundred periodicals from over sixty countries. It also includes unpublished academic and institutional research from the IRWI - Information Research Watch International database. LISA has an international perspective, and a diverse audience including researchers, students, library staff, and information professionals. LISA is established in the year 1969 published bi-monthly.

Bibliometrics

Bibliometrics has been defined as “the quantitative analysis of the characteristics behavior and productivity of all aspects of written communication, library staff and information users” the word Bibliometrics was introduced by Pritchard in 1969 which substituted the earlier term “Statistical Bibliometrics” which was used for the same concept. Various techniques of Bibliometrics analysis help to determine special trends in literature of given field study. It is now popular among library professionals and researchers. Bibliometrics studies are helpful in evaluating library services, collecting development, policy refinement, decision making and resource allocation and even weeding. Data produced by Bibliometrics methods provides a scientific basis to library administrator for decision making. Bibliometrics has been considered useful for curriculum analysis and appraisal of research output quality. (Mahapatra) Bibliometric has become a standard tool of science policy and research management in the past decade. All significant complains of science indicators to a large extent rely on publication and citation statistics and other Bibliometric techniques (Kumar 1998). Bibliometric is concern with the application of mathematical and statistical is major sub discipline of quantitative research. This is a tool traditionally used by the library and information science professional for studying the communication process,
information flow and professional for better understanding and effective management and dissemination of information.

1.2.5 Bibliometric Laws

One of the main areas in Bibliometric research concerns the application of Bibliometric laws. The three most commonly used laws in Bibliometric that are

- Zipf’s Law of word occurrence
- Lotka’s Law
- Bradford Law

There occurs Bibliometric three regularities to which have been given the name ‘Law’ Lotka’s Law of Scientific productivity (author publishing in a certain discipline) Bradford’s Law of of Scattering and Zipf’s Law of word occurrence, ranking of word frequency. Although claims have made that the three laws are basically the same, one of the difference line in the types of data. Lotka’s Law dealt with authors publishing and the numbers of paper published. Bradford observed the scattering of articles on specific subject in various journals; Zipf’s counted frequencies of words. Each of the distribution was empirically derived and they are similar to each other as special cases of a hyperbolic distribution, although many proofs have been offered by scientists supporting the theory of relatedness and similarity of these Laws. (Srivastava, 2010)

1.2.6 Digital Library

A digital library is a focused collection of digital objects that can include text, visual material, audio material, video material, stored as electronic media formats (as opposed to print, micro, or other media), along with means for organizing, storing, and retrieving the files and media contained in the library collection. Digital libraries can vary immensely in size and scope, and can be maintained by individuals, organizations, or affiliated with established physical library buildings or institutions, or with academic institutions.

1.3 Statement of Problems

The present study aims at analyzing the research publication of library and information professional in (LISA) Library and Information Science Abstracts. In academic and Scientific work, publication is the chief means of communications research, a primary means of recognition and reward and hence a central social
process in the institutions. Therefore it is through publication the scientists receive professional recognition esteem as well as promotion, advancement and achievement for future research publication is so central of productivity in research that the work becomes a work only when it takes a conventional. Which can be received assessed and acknowledge by the scientific community. Hence publication is a social norms in a public sense and serves as a tool for the better mint of the individuals after publication only. It can be called a research and could be fixed or judged and acknowledged by the scientist in Library and information science professional.

Is could be seen clearly from the above discussion that scientimetrics analysis is an important tools for analyzing any discipline. By keeping this view in mind, the researcher intends to indicates the study on research publication by the authors, scientist in (LISA) Library and Information Science Abstracts.

A Scientometrics analysis this study attempt to analyses the publication by the Library and information science professional in (LISA) in terms of growth rate area of research concentration, Geographical year wise, authorship productivity and authorship pattern.

1.4 Scope and Limitations

Present study is limited to publication of the library and information science professionals covered under LISA (Library and Information Science Abstracts) published during 2008-2012 on Digital libraries.

1.5 Population Sample of the Study

The Population sample of the study is given as follows:

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Year</th>
<th>No. of Articles</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2008</td>
<td>958</td>
</tr>
<tr>
<td>2</td>
<td>2009</td>
<td>1132</td>
</tr>
<tr>
<td>3</td>
<td>2010</td>
<td>1007</td>
</tr>
<tr>
<td>4</td>
<td>2011</td>
<td>967</td>
</tr>
<tr>
<td>5</td>
<td>2012</td>
<td>558</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>4622</td>
</tr>
</tbody>
</table>
1.6 Objective of the study

1. To examine and analyze the authorship pattern in Digital libraries
2. To find out specialization of professionals.
3. To identify authorship pattern and multiple authorship among professionals.
4. To find out proportion of single v/s multiple author paper.
5. To identify the collaboration among the professionals.

1.7 Hypothesis of the study

1. Single authorship is widely used among Library and Information Science professionals.
2. Authors affiliated to academic institutions contributes maximum.
3. Collaboration pattern is not reflected among the professionals.

1.8 Research Methodology

Data was collected from LISA. Data Analysis was done using various Bibliometrics Laws like Bradford’s Law, Zipfs Law, Lotkas Law etc.

Bibliometric is recent development in Library and Information Science. It is an application of mathematics and statistical methods to books and other media of communication. Interpretation of data was made through tables, charts and graphs.

1.9 Major Conclusions

1.9.1 Contribution of Research Articles year wise analysis

The distribution of research articles on digital Libraries by year and months published in LISA from 2008-2012. It is clear that the number of research articles has been increased over the months of January. It is indicates also that of the 2259 articles published in January months in five years. i.e. (48.88%) has the height number. While in the months of February 78 (1.68%) and August 77 (1.68%) has the lowest number. (Table No. 4.1)
1.9.3 Authorship Pattern year wise

It is clear that the 788 articles written by single author and it is the highest number published in LISA 2009. It indicates also that 374 articles written by single author published in LISA 2012. It is the lowest number. The number of research articles has been published in LISA written by two authors i.e. 229 (2009) it is the highest number and 82 articles published in 2012 with lowest number. It indicate that in 2012, 60 research articles are published written by three authors as well as 61 research articles are published in 2008 and those are lowest number. Table No.08 shows the distribution of research in year 2012. It is the lowest number in the average of five years 2008 to 2012. 57 articles written by four articles published in 2011 i.e. highest number. More than four author contributed (07) research articles in the year 2009. It is the lowest contribution in the year 2008 to 2012. In the year 2011, 23 research articles contribution by more than four authors. It is the highest number is the five years rank. 20 research articles are contributed by more than four authors. This confirms, “Single authorship is widely used among Library and Information Science professionals” (hypothesis no.1) is valid. (Table No. 4.7)

1.9.4 Relative Growth Rate & Doubling Time for Publication

The Relative Growth Rate \[R (P)\] and Doubling Time \[Dt (P)\] of Publication in Table No.4.8. It can noticed that the Relative Growth Rate of Publication\[R(P)\] lightly decrease from the rate of 0.7801 in 2009 to 0.1286 in 2012. The mean relative growth (i.e. 2008 to 2012) showed a growth rate of 0.3147. The corresponding Doubling Time for different years \[Dt (P)\] highly increased from 0.8883 in 2009 to 5.3888 in 2012. Thus as the rate of growth of publication was decreased, the corresponding Doubling Time was increased. (Table No. 4.8)

1.9.5 Relative Growth Rate & Doubling Time of Citations

The Relative Growth Rate \[R (C)\] and Doubling Time \[Dt (C)\] of Citations in Table No. 4.9 Figure no. 4.9. It can noticed that the Relative Growth Rate of Citation \[R (C)\] lightly decrease from the rate of 1.0476 in 2009 to 0.1478 in 2012. The mean relative growth (i.e. 2008 to 2012) showed a growth rate of 0.38732. The corresponding Doubling Time for different years \[Dt (C)\] highly increased
from 0.6615 in 2009 to 4.688 in 2012. Thus as the rate of growth of Citation was decreased, the corresponding Doubling Time was increased. (Table No. 4.9)

1.9.6 Degree of Collaboration

The above table reveals that, the year wise degree of collaboration which is falls between 0.36 and 0.63 with an average of 0.44 during the study period. This confirms, “Collaboration patterns in not reflected among the professionals” (hypothesis no. 3) is valid. (Table No. 4.10)

1.9.7 Degree of Collaboration among different category of authors

The degree of collaboration among two authors publication 0.20 is the highest and best was 0.14. In three authors collaboration 0.10 is highest least similarly in four authors collaboration 0.05 was highest and least was 0.02 whereas more than four authors collaboration 0.03 was highest and least was 0.06. It was noticed that 0.20 was highest among the collaboration in different category of authors. This confirms, “Collaboration patterns in not reflected among the professionals” (hypothesis no. 3) is valid. (Table No. 4.11)

1.9.8 Authors Productivity

The average author per paper for the period 2008-2012 is 2.09 and productivity per author mentioned as 0.48.

The above table shows that the data pertaining to author productivity and average author per year. The highest no. of productivity per author is 0.65 and lowest no of author is found 0.30. In the case of Average Author Per Paper the highest no. was found that 3.39 and lowest number was found 1.55. (Table No. 4.13)

1.9.9 Ranking of Publication Title

Rank list of journals, the study reveals that “choice Journal” score the first rank which account to 855 (18.50%) of the total papers. The “Electronic Library” scored second rank with 396 (i.e.8.57%) papers and OCLC system and service 305 (i.e.6.60%) scored third rank in the rank list. (Table No. 4.15)
1.9.10. Institution wise authorship

It can be observed from the table no. 4.19 that, maximum 33 (0.71%) authors were from the Millwood Group Corp followed by Jawaharlal Nehru University 11 (0.24%) and Meintanis, Konstantinos A. 11 (0.24%) authors. Out of 4622 total Institutions, 3213 (69.52%) are Academic Institutions like Universities and colleges while remaining 1409 (30.48%) are corporate as well as private Laboratories. Hence, "Authors affiliated to academic institutions contributes maximum" (hypothesis no. 2) is valid.

1.9.11 Place of publication

The country-wise distribution of papers; results indicated that the works were published by authors from 42 different nationalities, out of the total 4622 articles. As it is illustrated in the Table 4.16 USA 669 (i.e.14.47%), UK 406 (8.78%), Swaziland264 (i.e.5.71%), Uganda207 (i.e. 4.48%), Spain198 (i.e. 4.28%) were the countries with high contributions. (Table No. 4.20)

1.9.12 Rank list of authors

It is indicate that 9647 contributors have published 4622 articles. Therefore maximum number of contributors are Bookers, M.Keith, Wands, Bruce, Banks, Adam J and Veigl, Thomas and their contribution in articles are 60 each i.e. 0.62 percentages and their rank is first. (Table No.4.21)

1.9.13 Language wise distribution

The language wise distribution shown that the journal published in English language at the top stage i.e. 3989 (86.30%), while at the second stage is Spanish with 256 (i.e.5.54%), There are article is published in German 156 (i.e.3.38%), after that Slovenian is 122 (2.64%) and Portuguese languages with i.e.2.14% and 99 articles published. (Table No. 4.22)

1.10 Conspectus

The work facts and findings of the study are documented in the form of thesis. It discusses in details with suitable chapters. It is framed in accordance with the guidelines of the university applicable at the time for the award of desired degree of the university. The study has been systematically presented in following chapters;
Chapter-I  Introduction
The chapter deals with introduction to knowledge, information, authorship pattern, single author, Two authors, Three authors, Four author and more than four authors. Bibliometrics, its benefits for the research community. The concept of information, cybermetrics, scentometric, aims and objective, research methodology, scope and limitations, hypothesis and chapter outline.

Chapter-II  Authorship Pattern: A Review
In this chapter covered all literature published related to authorship pattern, Bibliometrics. Its laws, like Bradford’s Law, Zipfs Law, Lotkas Law etc. scientometrics, Literature Survey has been carried out and is present in this chapter. It through light on other works searched and was found relevant for deciding relevance of the present study.

Chapter-III  Library and Information Science Abstract: A Brief Profile
This chapter is specify framed as LISA is an international abstracting and indexing services designed for library and information science. Professional and other information specialist LISA provided bibliographic information about part and present development in librarianship information science online retrieval publishing and information technology. This database covers around five hundred periodical from over 60 countries. It also indicated unpublished academic and international research from the IRWI (Information Research Watch International Database).

Chapter-IV  Data Analysis and Interpretation
Deals with the Scientometric Study of Authorship pattern in LISA on Digital Libraries.

Chapter-V  Conclusion & Suggestions
Summarizes the major findings and implications, presents the conclusions drawn.
References


Marin, F.L. (2000). scientific integrity an introductory a text with case studies (ASM Press); Washington, 24(2).150-155


