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Bibliometric Analysis of the Library and Information Science Research Electronic Journal from 2004 to

Contents

2010

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Abstract

The purpose of this study was to conduct a bibliometric analysis of the LIBRES, Library and Information Science Research Electronic Journal between 2004 and 2010. Literature, both past and present, has established that bibliometric analysis plays a very important role in the field of Library and Information Science, especially in the areas of research evaluation and quality adjustment of published articles.

Bibliographic analysis was used to analyze the collected data. The results of the study revealed that a total of 61 articles were published in the 7-year period with 12 articles as the highest number in 2008. Most of the articles were within the general subject area of Library and Information Science and were written by a single author. Hence, the degree of collaboration was 0.279, and the majority of the publications were contributed by authors in universities.

Introduction

Bibliometrics is a research area that has gained increasing importance in the last decade due to the essential roles it plays in the discipline of Library and Information Sciences and in academia in the areas of research evaluation, study of scientific publications' output, and scientific research assessment through quantitative studies on research publications (Rehn & Kronman, 2008; Mattson, 2008). The Bibliometric Handbook for Karolinska Institute (2008), citing Pritchard, defined Bibliometrics as "the application of statistical and mathematical methods to books and other media of communication" (p.4). Some of these media of communication include books, monographs, journals, dissertations, papers in serials and periodicals, e-books, and e-journals (Glanzel, 2003). By using the ALA Glossary of Library and Information Science, the Reference.MD shows the definition of bibliometrics as "the use of statistical methods in the analysis of a body of literature to reveal the historical development of subject fields and patterns of authorship, publication, and use. It was formerly referred to as statistical bibliography" (Reference.MD, n.d.). Thanuskodi (2010) defines bibliometrics as "a research method used in Library and Information Science. It is a quantitative study of various aspects of literature on a topic and is used to identify the pattern of publication, authorship, and secondary journal coverage to gain insight into the dynamics of growth of knowledge in the areas under consideration" (p.1). Drawn from its etymology, biblio meaning "paper" and metrics meaning "measurements," bibliometrics is said to be the process of analyzing and measuring the publication patterns, authorship patterns, and citation pattern of a number of research papers within a particular defined period (Hussein & Fatima, 2011). It has fast become an important research tool especially in the field of library and information science. Glanzel (2003) opined, "Bibliometrics has become a standard tool of science policy and research management in the last decades. Various important compilations of science indicators heavily rely on publication and citation statistics and other, more sophisticated bibliometric techniques" (p.5).

It is a study that gives a detailed statistical analysis of texts, especially of published literature in different fields of learning.

Huang et al. state that the results of these bibliometric analyses serve as very useful tools for describing and evaluating countries, universities, research institutes, journals, research trends, specific research topics, and specific disciplines (as cited in Sam, 2008). Bibliometric analysis also can be helpful for librarians in the process of collection development. As a result of increased journal costs and slim budgets for libraries, collection development specialists must make careful selections based on the qualities and standards of journals. Bibliometric Analysis serves as a useful tool in assessing the quality of a journal and its articles (Thanuskodi, 2010).

Many articles have been published in the LIBRES, Library and Information Science Research Electronic Journal; however, no full bibliometric analysis has been conducted on the articles contained in the LIBRES. It is for this reason that this article focuses on analyzing the bibliometric status of the articles contained in LIBRES over a seven-year period. The period of seven years was used because it is a considerably long period

to study the pattern of articles published in the LIBRES journal. Besides the fact that no bibliometric analysis has been carried out on the LIBRES journal, LIBRES was also selected as the case study to carry out this bibliometric analysis on the basis that it is an open access electronic journal and that it is dedicated to new research areas in the discipline of Library and Information Science.

Literature Review

Bibliometric analysis is a vital tool for assessing research quality and performance. It also provides a measurement of connection between researchers and research areas through statistical analysis of citations (Nkiko & Adetoro, 2007; Rehn & Kronman, 2008).

In recent times, much research has been carried out on bibliometric analysis in different parts of the world such as Ghana, India, Nigeria, Taiwan, and Pakistan. One of the research works is the 10 Year Bibliometric Study of the Journal of Ayub Medical College in 2008 by Ullah, Butt, and Haroon (2008). This study revealed that a total of 9968 citations out of 572 articles published between 1997 and 2006 and that 97 out of the total of 572 articles were published in 2005. This study also showed that most of the published articles were written by authors from North West Frontier Province in Pakistan.

Thanuskodi (2010), in his Bibliometric Analysis of the Journal of Library Philosophy and Practice from 2005-2009, noted that a total of 249 articles were published during the period with 82 serving as the maximum number of articles published in 2009 and 10 serving as the minimum in 2005. The study also revealed that out of the 249 published articles, 78 were contributed by single authors (31.32%), while the rest (171 articles or 68.68%) were contributed by joint authors. In line with this, Ullah, Butt, and Haroon (2008), citing Xia et al. on the study of the Author Analysis of Articles Published in the Space Medicine and Medical Engineering Journal, documented that 13.1% of the published articles between 1988 and 1998 were single author papers.Thanuskodi also noted that journals accounted for the most frequently-used source of information, accounting for 1,026 (53.03%) of the total citations within the 5-year period. Nkiko and Adetoro (2007), in their study of the citation analysis of Covenant University's Pioneer Bachelor Degree students' research projects, found that books were the most frequently cited type of media (53.3%) while journal citations were close behind (25.16%). They stated that the "the gap between book and journal citations reflects the fact that the library's book collection is current and that students of this level do not yet appreciate the usefulness of journals for research" (p. 4).

Hussain and Fatima (2010) carried out an analysis as described in Bibliometric Analysis of the Chinese Librarianship for a period of five years and found that electronic journals had the highest number of articles (14) published in 2007 and that the most of the articles were authored by librarians, faculty members or researchers affiliated with academic or research institutions. In their study, they also noted that the United States had contributed more articles than any other country.

In a bibliometric study carried out on the Ghana Library Journal over a 7-year period, Sam (2008) reported that 43 journal articles were published and that 618 citations were made, averaging 14.4 citations per journal article. Journals accounted for the most frequently-cited type of media at 44.5%, followed by books (32.5%), and reports (9.4%). According to Sam, in the current sources of information, about 62.9% of the journals and 48.8% of the books appearing in the reference lists were published in 1990 or later. The study also revealed that the subject area most researched was academic libraries and that most of the authors were from universities (75%) while 12.5% of the authors were from research institutions or from parastatal organizations (that is, organizations owned fully or partly by the government). Sam opined that "the increasing number of publications from universities was as a result of the 'publish or perish' syndrome associated with academic institutions" (p. 3).

This study evaluates the articles contained in the LIBRES Research Electronic Journal (an open access electronic journal devoted to researches in the discipline) within a defined period and is carried out based on the research patterns from of the above cited literature.

LIBRES Research Electronic Journal

LIBRES is described as an "international refereed electronic journal devoted to new research in Library and Information Science. LIBRES is distributed through a listserver and a ftp site. Listserver subscribers are notified of new issues through the distribution of a table of contents to LIBRES, LIBREF-L, and any other e-conferences requesting the service" (Curtin University Department of Information Studies, n.d.).

This electronic peer-reviewed journal is published by the Department of Information Studies at Curtin

University in Western Australia. It was founded in 1993 and publishes biannually, in March and in September.

Significance of the study

Research is a major indicator of the level of growth of any discipline or field of learning because it is a viable medium for imparting, transmitting, and communicating knowledge (Thanuskodi, 2010). This bibliometric study will enlarge the knowledge base of information professionals on the present condition of library and information science research in the world today and provide them with some basis for future projections of the discipline.

Objectives of the study

The objective of this bibliometric study is to analyze the articles published in the LIBRES Research Electronic Journal between 2004 and 2010 showing:

1. the number of articles published per volume in each of the specified years;
2. the authorship pattern;
3. the subject areas covered in these issues;
4. the distribution of authors by institution types, and the length of the articles published in these issues;
5. the quality of references listed in each article;
6. the number of articles which were cited the LIBRES Research Electronic Journal;
7. the number of self-citations in the articles published during this time.

The items listed above have been chosen because they are important factors in determining the quality of articles contained in any journal, and because they are pivotal factors that can be used to determine the quality of articles contained in the LIBRES journal.

Methodology

The methodology adopted in the study was the bibliometric analysis. The study analyzed the articles included in the Essays and Opinons Section. It excluded the Reviews Section, News and Announcement Section, and Conference and Meeting Section. For each article, the following aspects were noted: the covered subject area, the number of authors, the length of the article, the number of cited references, the institutional affiliation of the author, and the number of self-citations. A total of 61 articles in 14 issues of the LIBRES journal published from 2004 to 2010 were used for the study, and the data are presented in the tables shown below.

Analysis, findings and discussion

For the data collected from the articles, the tables illustrate the frequencies and percentages. The results contained in the tables are described briefly.

YEAR	Volume No.	Frequencies (Number)	Percer (%)
2004	Vol. 14	11	18.03
2005	Vol. 15	8	13.11
2006	Vol. 16	7	11.48
2007	Vol. 17	9	14.75
2008	Vol. 18	12	19.67
2009	Vol. 19	7	11.48
2010	Vol. 20	7	11.48
TOTAL		**61**	**100**

Table 1: Number and percentage of articles by year

Table 1 shows the number and percentage of articles published within the 7-year period from 2004 to 2010. From the data in Table 1, the highest number of articles was 12, published in 2008, while the lowest number of articles was 7, published in 2006, 2009, and 2010. The average number of articles published within the 7-year period was 9 articles. From this table, it is evident that the most productive year was 2008.

No. of Articles	Year							Subject	Rank
	2004	2005	2006	2007	2008	2009	2010		
22	4	5	3	3	4	1	2	Library and Information Science (General)	1
9	4		2	2	1			Information Technology	2
7		1	1	3		1	1	Bibliometrics	3
5		1			4			Research Publications	4
4			1	1	1	1		Information Literacy	5
4	1					1	2	Public Libraries	5
3	2	1				1		Digitization	7
2					1	1		Library Consortia/Resource Sharing	8
2							1	User Studies/Information Seeking	8
1						1		Academic Libraries	1(
1							1	Archives Management	1(
1					1			Preservation and Conservation	1(
TOTAL	11	8	7	9	12	7	7	61	

Table 2: Distribution of number of articles by subject in descending order

Table 2 shows the distribution of the various subject areas of articles published in LIBRES between 2004 and 2010. There were 22 articles within the general subject areas of Library and Information Science, followed by 9 in Information Technology, 7 in Bibliometrics, 5 in Research Publications, 4 in Information Literacy, and 2 in Library Consortia and in User Studies. The subject areas with the lowest coverage in the 7-year period were Academic Libraries, Archives Management, and Preservation and Conservation, with one article each. The data gathered in this section shows that most authors concentrate on publications within the general subject coverage of Library and Information Science which is in line with the findings of Thanuskodi (2010), while other important areas in the discipline such as academic libraries, archives management, and preservation and

conservation are given less attention. The wide gap between articles covering the general subject area of Library and Information Science and articles in other subject areas of the discipline simply illustrates the level of popularity enjoyed by the general LIS as a subject area in this unique discipline. Researchers should begin to redirect attention to other upcoming areas in the discipline of Library and Information Science.

YEAR	Single Author	2 Authors	3 Authors	4 Authors
2004	7	4	-	-
2005	6	1	1	-
2006	6	1	-	-
2007	6	1	2	-
2008	9	1	1	1
2009	5	2	-	-
2010	5	2	-	-
TOTAL	44	12	4	1
Percentage (%)	72.13	19.67	6.56	1.64

Table 3: Authorship pattern

Table 3 displays the authorship pattern of articles published within the 7-year period. Most of the articles were written by single authors. The data show 72.13%, a total of 44 out of 61 articles published within the period. A total of 17 articles were produced by joint authors: 12 articles by two authors (19.67%), 4 articles by three authors (6.56%), and 1 article by four authors (1.64%).

According to the formula described by Subramanyami (as cited in Hussain & Fatima, 2011), the degree of collaboration in the LIBRES Research Electronic Journal can be derived using the following formula:

$$C = \frac{NM}{NM + NS}$$

Where C = the degree of Collaboration

NM = the number of joint authored articles

NS = the number of single authored articles

From the study, the number of joint authored articles is 17, and the number of single authored papers is 44. This result reveals the level of co-authorship of the articles published in the LIBRES. It shows a low level of joint authorship and a high level of single authorship. This result also reveals that there is a lack of group research being carried out in the discipline of Library and Information Science.

Applying NM = 17 and NS = 44 to the formula, the result is found as shown below:

$$C = \frac{17}{17 + 44} = \frac{17}{61}$$

$$C = 0.279$$

The degree of collaboration in the LIBRES Research Electronic Journal is 0.279 indicating that there are more articles by single authors in the journal publications. This indicates a considerably low level of collaboration among authors of the articles published in the LIBRES Research Electronic Journal. This result is also similar to the result derived in the study by Hussain and Fatima (2011). Most researchers would rather carry out research alone rather than collaborate with other researchers within or outside of the field of Library and Information Science.

INSTITUTION TYPE	YEAR							TOTAL NUMBER AFFILIATEC INSTITUTIO
	2004	2005	2006	2007	2008	2009	2010	
Universities	11	7	7	8	16	7	9	65
Research Inst. and Information Centers	-	1		1	-	2	1	5
Ministries	-			1	-	-	-	1
Colleges*	1				1	-	-	2
TOTAL								73

Table 4: Distribution of authors by institution type

College: A school, sometimes but not always a university, offering special instruction in professional or technical subjects.

Table 4 reveals the distribution of authors by institution type. In some instances, the affiliations of articles were traced to more than one institution due to jointly authored articles, bringing the total number of affiliate institutions to 73. Most of the contributing institutions were universities (65 institutions or 89.04%), five institutions were research institutions and information centers (6.85%), two were colleges (2.74%), and one was a ministry. The high rate of publications from universities reveals the prolific nature of authors in universities who are used to carrying out research, unlike those from ministries or colleges.

No. of Pages	YEAR							TOTAL
	2004	2005	2006	2007	2008	2009	2010	
1 – 10	4	3	1	1	1	3	1	14
11 – 20	5	2	3	5	10	2	4	31
21 – 30	1	2	3	3	1	2	2	14
31 & above	1	1	7	-	-	-	-	2
TOTAL	11	8	7	9	12	7	7	61

Table 5: Length of Article

Table 5 shows the distribution according to the length of the articles. Articles between 11 and 20 pages had the

highest number, 31 (50.82%), and this was closely followed by articles between 1 and 10 pages (22.95%). Articles between 11 and 20 pages had the highest number (31 or 50.82%), closely followed by 1-10 pages (22.95%), 21-30 pages (22.95%), and 30+ pages (1 article, or 3.28%). This data analysis demonstrates that most of the articles published within the study period were between 11 and 20 pages in length and that very few articles had more than 31 pages. This shows that the published articles are not very lengthy but that they are summarized and of a good quality because some of the lengthy articles usually have graphs and tables.

No. of References	Year							TOTAL
	2004	2005	2006	2007	2008	2009	2010	
1 – 10	2	4	-	-	1	1	-	8
11 – 20	2	3	3	3	3	2	-	16
21 – 30	2	1	1	2	3	1	1	11
31 – 40	2	-	1	1	3	2	3	12
41 – 50	2	-	-	1	2	1	1	7
51 & above	1	-	2	2	-	-	2	7
TOTAL								61

Table 6: Number and Percentage of References per Article

Table 6 indicates the number and percentage of references per article. Sixteen articles had 11-20 references (26.23%), twelve articles had 31-40 references (19.67%), eleven articles had 21-30 references (18.03%), eight articles had 1-10 references (13.12%), seven articles had 41-50 references (11.48%), and seven articles had 51+ references (11.48%). From the data contained in Table 6, it is evident that the numbers of references cited by authors whose articles are published in the LIBRES are quite high. The articles with 11-20 references reveal that dedicated study and literature review has been carried out by the researchers, allowing them to write articles of a considerably high standard.

YEAR	No. of Citations	No. of LIBRES Journals Citations
2004	328	-
2005	93	-
2006	266	2
2007	310	3
2008	230	6
2009	175	3
2010	317	4
Total	1719	18

Table 7: Distribution of LIBRES Research Electronic Citations by Year

Table 7 shows the distribution of LIBRES citations in the published articles. Between 2004 and 2010, a total of 1719 citations were made in the 61 published articles, and only 18 citations were accredited to LIBRES. In 2008, the highest number of LIBRES citations was 6. This indicates that only a few of the authors who publish articles in the LIBRES actually cite and make reference to the existing articles in the LIBRES, which will help boost the status and knowledge base of the journal.

YEAR	No. of Citations	No. of Self-Cita
2004	328	6
2005	93	1
2006	266	3
2007	310	5
2008	230	3
2009	175	2
2010	317	3
Total	1719	23

Table 8: Number Author Self-Citations (first author citations only)

Table 8 reveals that out of a total of 1719 citations, only 23 citations (1.34%) were self-citations. The highest number of author self-citations was 6 in 2004, closely followed by 5 in 2007. The year with the fewest author self-citations was 2005 with only one author self-citation. The data contained in Table 8 show a very low level of self-citation by authors.

From the collected data, it can be concluded that most of the articles published in LIBRES are within the

general subject area of Library and Information Studies, while other new and upcoming areas in the discipline are not given their due attention. This conclusion is consistent with the research of Thanuskodi (2010). The study also indicates that there is very little collaborative research being carried out by professionals in the field of Library and Information studies. This study found that most articles were written by single authors. In contrast, Ullah, Butt, and Haroon (2008) found that the majority of published articles were written by joint authors.

This research also indicated that most of the authors of articles in the LIBRES were from universities; very few authors were from ministries and colleges. This is not surprising due to the fact that authors from universities tend to view research as part of their responsibilities.

Recommendations and conclusion

This study is meant to elicit findings on the bibliometric status of articles published between 2004 and 2010 in the LIBRES Research Electronic Journal. The findings of the study reveal that a total of 61 articles were published throughout the 7-year period with the most articles (12) published in 2008 and the least published in 2006, 2009, and 2010. It was also indicated that most of the publications were in the general subject area of Library and Information Science, which is similar to the findings of Huanwen (1996). Huanwen found that articles pertaining to the basic theories of Library and Information Science consisted of 25.7% - 31.9% of articles published during the 3-year study. In this study, it was found that the areas of Archives Management and of Preservation and Conservation had the lowest number of articles published. More attention should be directed to these areas by researchers. Professionals in the discipline of Library and Information Science should also encourage younger colleagues to perform research in these areas of the discipline.

The authorship patterns found show that the majority of articles were written by single authors with a degree of collaboration of 0.279. More collaborative research should be carried out by researchers who publish articles in the LIBRES and by other scholars in the field of Library and Information Science as more collaboration will improve the quality of research papers. Collaborative research will aid in improving the quality of articles contained in any journal.

The study also revealed that the rate of author self-citation was quite low, at 23 author self-citations out of 1719 total citations made in the 7-year period studied. The number of the LIBRES Research Electronic Journal citations was quite low, at 18 out of 1719 total citations. The published articles should span the entire field of Library and Information Science in order to bring about a better rate of journal citation and to fulfill the goal of the journal, which is to communicate knowledge. The level of journal citation plays a vital role in establishing the quality of a journal. A journal should not be narrow in subject coverage; rather, it should cover the many areas within a field.

Most of the contributing institutions were universities, while few accounted for other types of institutions. Researchers in other institutions such as research and information centers and ministries should direct more attention to carrying out research which will help heighten the level of knowledge within the field and communicate new findings in the discipline. When professionals in these institutions perform more research, their findings are added to the body of available knowledge in the field, which in turn improves the status of their institutions.

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