AUTHORSHIP PATTERN AND DEGREE OF COLLABORATION IN LIBRARY MANAGEMENT

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ABSTRACT

The study presents the trends in authorship pattern and authors collaborative research in Library Management with a sample of 12263 articles during the period 2000-2009. Single authored articles are dominant i.e. 8327 (67.90%), the year wise distribution of articles was high i.e. 1412 (11.51%), the mean of relative growth and Doubling Time for the first five year was 0.3362 and 1.5504, The mean value for the overall degree of collaboration for the 2000-2009 is found to be 0.277, majority of the articles S are written in English language i.e. 45.51%, the average number of authors per article is 1.41%.

KEYWORDS

Library Management, Authorship Pattern, Collaboration pattern, Scientometric Analysis, Scientometric, Bibliometrics.

INTRODUCTION

Scientometrics is to provide quantitative characterization of scientific activity; scientometrics is branch of library and information science. In 1969, vassily V. Nalimov and Z.M. Mulchenko coined the Russian equivalent of the term 'scientometric' ('nalkometriyas') (Nalimov and Mulchenko, 1969). As the name would imply, thisterm is mainly used for the study of all aspects of the literature of science and technology. The term had gained wide recognition by the foundation in 1978 of scientometrics by Tibor Brawn in Hungary. According to its subtitle, scientometrics includes all quantitative aspects of the science of science, communication in science, and science policy (Wilson, 2001). Soon after its foundation Nalimov became the consulting Editor. Some other early papers by Nalimov which helped to nature the
nascent discipline of scientometrics include: (1970), Nalimov and Mulchnko (1969 a) and Nalimov et at. (1971).

Application of mathematical and statistical methods of scientific literature (Derek De Solla, 2000); this enables to evaluate the size of scientific production on the assumption that the essence of scientific activity is the assumption the production of knowledge (Garfield, 2000).

The paper consists of five main parts: introduction, literature review, research design, results and discussions, and conclusions.

DEFINITIONAL ANALYSIS

BIBLIOMETRICS

The terms bibliometrics consist of two words namely ‘Biblio’ and ‘Metrics’, biblio means book and metrics means simply measurement.

Bibliometrics is the quantitative treatment of the properties of recorded as bibliometric is the study of use of document and pattern of publication in which mathematical and statistical method have been applied. (Fair Thom 1970).

SCIENTOMETRICS

Scientometrics is a, study of the quantitative aspects of science as a discipline or economics activity. It involves quantitative studies of scientific activities including, among others, publication, and so overlaps bibliometrics to some extent. Whereas scientometrics can be defined as the quantitative study of science and technology. Bibliometrics applied to scientific articles is called scientometrics. (Tague-Sutcliffe, 1992).

SCIENTOMETRIC ANALYSIS

The main currency for an academician is his reputation just as that for the politician is the politics it is the power that commands and that for the business person is the wealth he has accumulated. (Becher, 1989).
LISA

Library and Information Science Abstracts is an international abstracting and indexing tool designed for library professionals and other information specialists. LISA is established in the year 1969 published monthly. It is an International index and abstracting tool. Provides bibliographic coverage for the field of information science as well as more traditional library science, including related areas, such as publishing, online retrieval, and new information technologies. Indexes and abstracts approximately 7,000 publication annually, including over 440 journal and selected conference proceedings, book review and research service, with content from more than 68 countries and in 20 languages.

SCOPE AND LIMITATION OF THE STUDY

Library and Information Science Abstract (LISA) is published monthly. The present study is based on 11 volumes of LISA. The subject Library Management covered under LISA for the period of 10 years i.e. (2000-2009) was taken for the present study. The present study is based on 12263 articles on Library Management covered by LISA. The data was analyzed by using various parameters which is presented in the form of tables and figures.

REVIEW OF LITERATURE

Scientometric is complex of quantitative method which is used to investigate the process of science. According to Kademani and et al. (2005) the key scientometric concepts include: if scientist is renowned personality in this field these specializations will naturally attracts more number of collaborators. Mahapatra and Kaul (1992); Singh (2007); Balasubramanian and Bhaskar, (1984); Kogamuramath, (2001); Kumar, (1984); James, (2008), Deshpande (1997); indicates that the use of analysis of chrononological distribution show that older documents are less cited than newer ones.

Haridasan, (2007), indicated that the citing half life (median citation age) shows how far back in time one must go to account for the age one half of the bibliographic references published in a journal in a particular year.
Le Minor, (1991), compiled an inventory a list of article that subservient to the appearance of the original article refers to as cite article this method has been used expensively in the legal profession and is particularly applicable to scientific literature.

Wilson, (2001) analyzed. It is useful to establish a list of journals mostly cited by the author.

Ojedokun and Owolabi, (2003); indicates that the year wise distributions of citation use an idea about scattering and expansion of the subject or discipline.

Marklein (1997), carried out study in the specific period how many book and periodicals or articles are distributed in a specific period.

Lehnus (1973); analyzed Authors enrich a subject by their contributions citation analysis studies identify the familiar and prominent authors in the field.

Brace (1999); indicates that the highly cited journals are listed as ‘core journals’ of a specific subject. The core journals are considered as ‘central set of journals, which most clearly reflects the conceptual essence of the research being reported in the discipline.

Mahapatra (1985); carried out study in Further, if the number of articles in a subject doubles during a given period then the difference between the logarithms of numbers at the beginning and at the end of this period must be the logarithm of the number 2. Mahapatra (1985); assessed the Relative Growth Rates (RGR) is a measure to study the increase in number of articles / pages per unit of articles/ pages per unit of time. Teague et al., (1981)

OBJECTIVES

The main Objectives of the present study is

1. To find out the Year wise distribution of publication.
2. To find out the language wise distribution of journal.
3. To find out the Authorship pattern.
4. Relative growth rate and Doubling time of publications.
5. To find out the Degree of authors collaboration.
RESEARCH METHODOLOGY

Quantitative research is widely used in both the natural science and social sciences, from physics and biology to sociology and journalism. It is also used as a way to research different aspects of education. It is applicable to that phenomenon that can be expressed in terms of quantity (Gupta and Singh, 2009)

For the present study quantitative research method is used.

DATA ANALYSIS

Library and Information Science Abstract (LISA) is published monthly. The present study is based on 11 volumes of LISA. The subject Library Management covered under LISA for the period of 10 years i.e. (2000-2009) was taken for the present study. The present study is based on 12263 articles on Library Management covered by LISA. The data was analyzed by using various parameters which is presented in the form of tables and figures.

According to the objectives of the study, analysis and finding of the study are outlined below.

RESULTS AND DISCUSSIONS

1. The year-wise distribution of publication is shown in table no. 1.

Table No. 1: Year-wise distribution of publication

<table>
<thead>
<tr>
<th>Sr. No</th>
<th>Year</th>
<th>No. Of Articles</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2000</td>
<td>1172</td>
<td>9.56</td>
</tr>
<tr>
<td>2</td>
<td>2001</td>
<td>1308</td>
<td>10.67</td>
</tr>
<tr>
<td>3</td>
<td>2002</td>
<td>1107</td>
<td>9.03</td>
</tr>
<tr>
<td>4</td>
<td>2003</td>
<td>1329</td>
<td>10.84</td>
</tr>
<tr>
<td>5</td>
<td>2004</td>
<td>1412</td>
<td>11.51</td>
</tr>
</tbody>
</table>
Here, an attempt was made to calculate the scholarly publication for the period of ten years. Table-1 and graph-1 presents the year wise distribution of publication.

**Figure No. 1. Year-wise distribution of publication**

The average number of article publication was 12263 articles per year. In the study, the contribution of earlier five years (2005-2009) was less than the average publications per year. Out of 12263 articles 1412 (11.51%) articles were published in 2004 and 1044 (8.51%) articles were in 2009, which are highest and lowest in ten years respectively.

2: Relative Growth Rate and Doubling Time of Publications is shown in table no 2.

**Table No.2: Relative Growth Rate and Doubling Time of Publications**

<table>
<thead>
<tr>
<th>Year</th>
<th>No. of publication</th>
<th>Cumulative no of publication</th>
<th>Log$_{10}$(P)</th>
<th>Log$_{2}$(P)</th>
<th>$[R(P)]$</th>
<th>Mean $[R(P)]$</th>
<th>$[Dt(p)]$</th>
<th>Mean $[Dt(p)]$</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>1172</td>
<td>1172</td>
<td>-</td>
<td>7.066</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

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The Relative Growth Rate \([R(P)]\) and Doubling Time \([Dt(P)]\) of publications are derived and presented in table no 3.2. It can be noticed that Relative Growth Rate of publication \([R(P)]\) decreased from the rate 0.75 in 2001 to 0.089 in 2009. The mean Relative Growth for the first five year (i.e. 2000 to 2004) showed a growth rate of 0.3362 where as the mean relative growth rate for the last five year (i.e. 2005 to 2009) reduced to 0.1324. The corresponding Doubling Time for different year \([Dt(P)]\) gradually increased from 0.924 in 2001 to 7.78 in 2009.
The mean Doubling Time for the first five year (i.e. 2000 to 2004) was only 1.5504 which was increased to 5.6432 during the last five year (i.e. 2005 to 2009). Thus as the rate of growth of publication was decreased, the corresponding Doubling Time was increased.

3. Language wise distribution of journal is shown in table no.3.

Language is media for communication for authors’. Selection of document depend upon many factors like subject matter, year of publication, country of origin, method of work, language and availability of source matter.

Table no.3: Language wise distribution of journal.

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Language</th>
<th>No. Of Articles</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>English</td>
<td>5581</td>
<td>45.51</td>
</tr>
<tr>
<td>2</td>
<td>Swedish</td>
<td>315</td>
<td>2.57</td>
</tr>
<tr>
<td>3</td>
<td>French</td>
<td>1178</td>
<td>9.61</td>
</tr>
<tr>
<td>4</td>
<td>German</td>
<td>1520</td>
<td>12.40</td>
</tr>
<tr>
<td>5</td>
<td>Danish</td>
<td>97</td>
<td>0.79</td>
</tr>
<tr>
<td>6</td>
<td>Chinese</td>
<td>770</td>
<td>6.28</td>
</tr>
<tr>
<td>7</td>
<td>Japanese</td>
<td>935</td>
<td>7.24</td>
</tr>
<tr>
<td>8</td>
<td>Italian</td>
<td>765</td>
<td>6.24</td>
</tr>
<tr>
<td>9</td>
<td>Icelandic</td>
<td>251</td>
<td>2.05</td>
</tr>
<tr>
<td>10</td>
<td>Slovenian</td>
<td>422</td>
<td>3.44</td>
</tr>
<tr>
<td>11</td>
<td>Spanish</td>
<td>348</td>
<td>2.84</td>
</tr>
<tr>
<td>12</td>
<td>European</td>
<td>81</td>
<td>0.66</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>12263</td>
<td>100.00</td>
</tr>
</tbody>
</table>
Table no. 3 shows the languages of expression with the number of articles. In the current study, 12 languages i.e. English, Swedish, French, German, Danish, Chinese, Japanese, Italian, Icelandic, Slovenian, Spanish and European were found as a medium of scholarly presentation. Majority of the articles with 45.51% (5581 articles) are written in English language.

4. Authorship pattern is shown in table no. 4.

Table no.4: Authorship pattern.

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>No. of Author</th>
<th>No. of Articles</th>
<th>Total No. of Authors</th>
<th>% of Articles</th>
<th>% of Authors</th>
<th>Community of Articles</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>One Author</td>
<td>8327</td>
<td>8327</td>
<td>67.90</td>
<td>48.21</td>
<td>67.90</td>
</tr>
<tr>
<td>2</td>
<td>Two Author</td>
<td>1904</td>
<td>3808</td>
<td>15.52</td>
<td>22.05</td>
<td>83.42</td>
</tr>
<tr>
<td>3</td>
<td>Three Author</td>
<td>723</td>
<td>2169</td>
<td>5.90</td>
<td>18.58</td>
<td>89.32</td>
</tr>
<tr>
<td>4</td>
<td>Four Author</td>
<td>553</td>
<td>2208</td>
<td>4.50</td>
<td>14.78</td>
<td>93.82</td>
</tr>
<tr>
<td>5</td>
<td>Mention Not Author</td>
<td>757</td>
<td>757</td>
<td>6.18</td>
<td>4.38</td>
<td>100</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>12263</strong></td>
<td><strong>17269</strong></td>
<td><strong>100</strong></td>
<td><strong>100</strong></td>
<td><strong>100</strong></td>
<td></td>
</tr>
</tbody>
</table>
Figure No 4. Authorship Pattern

Authorship pattern of the articles is presented in the Table-4. The study reveals that total of (17269) authors have contributed the 12263 articles leaving the frequencies of author. The average number of authors per article found to be 1.41.

Among 12263 articles, 8327 (67.90%) articles are written by single author and 3936 (32.10%) articles are written by two or more authors. One authored articles comprised highest percentage (67.90%), following two-authored articles (15.52%) of the total 12263 articles. The authorship pattern reveals a remarkable difference between the number of single author and multiple authors. Very less number of articles are written by four authors.

5. Degree of author’s collaboration is shown in table no 5.

Various methods have been proposed to calculate the degree of research collaboration. Here, in this study the formula proposed by Subramanyam (1983) has been used.

The degree of collaboration $C = \frac{Nm}{Nm + Ns}$

Where,

$C =$ Degree of collaboration in a discipline.

$Nm =$ number of multi-authored papers in the discipline.

$Ns =$ number of single-authored papers in the discipline.
Table No 5. Degree of author’s collaboration

<table>
<thead>
<tr>
<th>Year</th>
<th>One Author</th>
<th>Two Author</th>
<th>Three Author</th>
<th>Four Author</th>
<th>Mention not Author</th>
<th>Total</th>
<th>Degree of Collaboration (DC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>864</td>
<td>137</td>
<td>53</td>
<td>23</td>
<td>95</td>
<td>1172</td>
<td>0.198</td>
</tr>
<tr>
<td>2001</td>
<td>942</td>
<td>171</td>
<td>48</td>
<td>33</td>
<td>114</td>
<td>1308</td>
<td>0.211</td>
</tr>
<tr>
<td>2002</td>
<td>806</td>
<td>128</td>
<td>42</td>
<td>38</td>
<td>93</td>
<td>1107</td>
<td>0.205</td>
</tr>
<tr>
<td>2003</td>
<td>912</td>
<td>275</td>
<td>51</td>
<td>46</td>
<td>45</td>
<td>1329</td>
<td>0.290</td>
</tr>
<tr>
<td>2004</td>
<td>928</td>
<td>215</td>
<td>102</td>
<td>86</td>
<td>81</td>
<td>1412</td>
<td>0.303</td>
</tr>
<tr>
<td>2005</td>
<td>933</td>
<td>162</td>
<td>79</td>
<td>72</td>
<td>58</td>
<td>1304</td>
<td>0.251</td>
</tr>
<tr>
<td>2006</td>
<td>830</td>
<td>165</td>
<td>89</td>
<td>64</td>
<td>120</td>
<td>1268</td>
<td>0.277</td>
</tr>
<tr>
<td>2007</td>
<td>905</td>
<td>133</td>
<td>89</td>
<td>65</td>
<td>74</td>
<td>1266</td>
<td>0.241</td>
</tr>
<tr>
<td>2008</td>
<td>572</td>
<td>331</td>
<td>45</td>
<td>68</td>
<td>36</td>
<td>1053</td>
<td>0.437</td>
</tr>
<tr>
<td>2009</td>
<td>635</td>
<td>187</td>
<td>125</td>
<td>57</td>
<td>40</td>
<td>1044</td>
<td>0.368</td>
</tr>
<tr>
<td>Total</td>
<td>8327</td>
<td>1904</td>
<td>723</td>
<td>552</td>
<td>757</td>
<td>12263</td>
<td>0.277(Mean)</td>
</tr>
</tbody>
</table>

In the study of the degree of collaboration during the overall 10 years (2000-2009). But, when we calculate the year-wise degree of collaboration for 10 years, the results arise different. The Table-4 represents the year wise number of multi-authored articles and their degree of the collaboration. In the study, the degree of collaboration of all years is almost same of the mean value as 0.277. The analysis shows that in the span of 10 years, single authored articles are highest and predominant on multi authorship.

SUMMARY OF FINDINGS

- The Year-wise distribution of 12263 articles published from 2000-2009 LISA was seen. Maximum number of articles 1412 (11.51%) were in the year 2004 and minimum number of articles 1044 (8.51%) were published in the year 2009.

- The Relative Growth Rate \([R(P)]\) of publications are derived the mean value of 0.3362 and 0.1324 and mean value for the Doubling Time \([Dt(P)]\) of 1.5504 and 5.6432.
5581(45.51%) of records are in English language. And less than 81 (0.66%) records are in European language. Language is media for communication authors cites different types of document for writing where it was seen that English is a predominant language.

Single authored articles are dominant i.e. 8327 (67.90%), followed by two authored 1904(15.52%) and three authored 723(5.90%) respectively.

In the collaborative measures in the field of Library Management. The mean value for the overall Collaborative Co-efficient and Degree of Collaboration for the year 2000-2009 is found to be 0.160 and 0.277.

CONCLUSION

1. The Year-wise distribution of 12263 articles published from 2000-2009 LISA was seen. Maximum number of articles 1412 (11.51%) were in the year 2004.

2. The mean of relative growth for the first five year showed a growth rate of 0.3362 where as the mean for the last five year reduced to 0.1324. The mean for Doubling Time for the first five year was only 1.5504 which was increased to 5.6432 during the last five year.

3. The study reveals that total of (17269) authors have contributed the 12263 articles leaving the frequencies of author. The average number of authors per article found to be 1.41.

4. In the collaborative measures in the field of Library Management. The mean value for the overall and Degree of Collaboration for the year 2000-2009 is found to be 0.277.

5. 5581(45.51%) of records are in English language. And less than 81 (0.66%) records are in European language.
REFERENCES


(p.180).


