CHAPTER : 2

USE OF BIBLIOMETRICS IN SOCIAL SCIENCE RESEARCHES : A LITERATURE SURVEY
History of social sciences can be traced back to the beginnings of the 20th century. Among different social science disciplines, economics and political science were the first to gain recognition as independent or autonomous disciplines. The disciplines of sociology, psychology and anthropology were latecomers on the scene and are still in the adolescence. White's 'sources of information in the social science' includes history, geography, economics and business administration, sociology, anthropology, psychology, education and political science as the main subjects of social sciences. These subjects have, in common, a concern for the behaviour of man in relation to his fellows and to the environment they share. Among the subjects which formed social sciences, two main tendencies dominated: first was to drive towards unification, i.e. towards a single master social science, the second was to drive towards diversification. The latter triumphed with the result that highly specialized disciplines have emerged.

The intent of this chapter is to review the general area of bibliometrics, with special emphasis on the social sciences. In the present study for the collecting data,
'Library and Information Science Abstracts' (LISA) is opted as the source. This publication is a comprehensive source of bibliographic information in the field of bibliometrics published in all the languages.

Table 2.1 presents a comprehensive statistics of publications on bibliometrics in social sciences.

Table 2.1
Bibliometric Statistics of Publication in Social Sciences

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Subject</th>
<th>Year 1964-'74</th>
<th>1975-'79</th>
<th>1980-'84</th>
<th>1985-'90</th>
<th>Total</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Sociology</td>
<td>06</td>
<td>12</td>
<td>26</td>
<td>15</td>
<td>59</td>
<td>3.93</td>
</tr>
<tr>
<td>2.</td>
<td>Psychology</td>
<td>-</td>
<td>01</td>
<td>07</td>
<td>13</td>
<td>21</td>
<td>1.39</td>
</tr>
<tr>
<td>3.</td>
<td>Political Science</td>
<td>03</td>
<td>-</td>
<td>01</td>
<td>03</td>
<td>07</td>
<td>0.46</td>
</tr>
<tr>
<td>4.</td>
<td>Economics</td>
<td>05</td>
<td>02</td>
<td>03</td>
<td>13</td>
<td>23</td>
<td>1.53</td>
</tr>
<tr>
<td>5.</td>
<td>Education</td>
<td>-</td>
<td>03</td>
<td>09</td>
<td>21</td>
<td>33</td>
<td>2.19</td>
</tr>
<tr>
<td>6.</td>
<td>Management</td>
<td>-</td>
<td>02</td>
<td>01</td>
<td>01</td>
<td>04</td>
<td>0.26</td>
</tr>
<tr>
<td>7.</td>
<td>Geography</td>
<td>02</td>
<td>03</td>
<td>05</td>
<td>08</td>
<td>18</td>
<td>1.19</td>
</tr>
<tr>
<td>8.</td>
<td>History</td>
<td>01</td>
<td>01</td>
<td>02</td>
<td>03</td>
<td>07</td>
<td>0.46</td>
</tr>
<tr>
<td>9.</td>
<td>Other than Social Science</td>
<td>154</td>
<td>263</td>
<td>358</td>
<td>554</td>
<td>1329</td>
<td>89.59</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>171</td>
<td>287</td>
<td>412</td>
<td>631</td>
<td>1501</td>
<td>100.00</td>
</tr>
</tbody>
</table>
From table 2.1 it is revealed that during the 27 year period (1964-1990) a very few (11.41%) papers have been published on bibliometrics researches in social sciences while other than social sciences comprised an over all 89.59%. The maximum number of citation studies were made in 1985-90. Out of the total studies 631 made during this period the social sciences have only 77 papers on this type of study. Only considering the field of social sciences, it is evident from the table that sociology is the most predominant subject group comprising 3.93% papers on bibliometrics studies. It is followed in descending order by education (2.19%), economics (1.53%), psychology (1.39%), geography (1.19%), political science and history (0.46%). Very few attempts have been made in management which account for only 0.26%.

This chapter surveys all the citation studies which could be located for the social sciences and attempts to analyse and combine their results in an understandable and manageable form. There are two general reviews of social science citation studies, both appearing in the early 1970s, the work of Broadus and Brittain. At the time of his review, Broadus suggested that 'enough citation studies have been completed to produce material for interesting comparison in the social sciences'. Brittain used somewhat different terminology for a similar area of research - 'At the systemic level of analysis it is the artifacts of communication created by
researchers/teachers that are the units of analysis. These artifacts of communication include citations, articles, monographs and prepublication papers.\(^3\)

On the basis of Broadus review, it seems evident that English-speaking social scientists do not depend greatly upon research materials in foreign languages and that in education and business administration they have used practically none. In terms of form, books or non-serials were found to be an important source of citation, ranging from 31% in education to 62% in sociology. In terms of the age of the literature cited, percentage of materials published within 10 years or less ranged from 45% in economics to between 70 to 80% in sociology. Brittain, in his review, includes studies of the growth, size and obsolescence rate of social science literature, as well as reference scattering and bibliographic coupling. He summarizes areas of sociology, economic history and political science, social scientists make greater use of the older literature than do natural scientists, but in the experimental areas of social sciences, the obsolescence rate is closer to that in the natural sciences.

Martin used as his source 46 books listed in the law and social science section of the United States 'Quarterly Book List'. These source books were published in 1948 & 1949. He sampled the citations, the number chosen for analysis was 3,024.\(^4\) Mark likewise studied citations relative to economics,
but used a sample of 3,471 citations found in ten of the field's representative journals published in the years 1945 to 1950. Meier also in sociology, used six journals published in 1947 and 1948, resulting in a sample of 2,993 citations.

Earle and Vickery, in a study which included science and technology, gathered citations from social science books and journals published in 1965, and the analysis was based largely on their 13,412 references to social science literature. They found that 70% of citations from the sciences were to other science subjects with only 1% to subjects other than science and technology. However, 9% of the citations from the social sciences were to science subjects and another 9% were to technology subjects.

Gromaner has tried to focus upon a comparison of the most important influentials in contemporary American and British sociology covering a time period of eleven years 1958-68. He has compared the names of the authors most cited in 'American Sociological Review' and 'British Journal of Sociology' for two time periods, 1958-62 as period I and the time period 1967-68 as period II. He found that the lists for the second time period contained a larger number of names in common than the list for the first period. This finding was interpreted as support for the thesis that sociology is becoming more international.
Line and Roberts dealt with the size, growth and composition of social science literature up to 1973. The data were gathered as part of a wide-range project concerned with the Design of Information Systems in the Social Sciences (DISISS). The base used for most of the calculations was a file of social science serial titles collected especially for the main research project, as it was found that no published list was adequate for the purpose. This file-check list of Social Science Serials (CLOSS) - contains 6,232 records including 3,909 titles current (in 1974), 1,595 'dead' titles, and 728 'previous' titles (i.e. titles which have changed, whether or not the serials in question are still current). The data were supplemented by other sources: Ulrich's serial directories, the UNESCO statistical yearbook (referred to as UNESCO), and the world list of social science Periodicals (WLOSSP). The figure of nearly 4,000 current titles on CLOSS is far lower than estimated based on Ulrich and UNESCO, which give between 20,000 and 27,000 current titles in 1970, but larger than the latest edition of WLOSSP (1973 data). The average annual growth rate of social science serial titles between 1820 and 1870 was 3.44% per annum. Between 1870 and 1900 it was 3.63% per annum, between 1900 and 1940 it was 3.08% per annum and between 1950 and 1970 it was 3.35% per annum, so it seems as if there has been a slight acceleration of growth since the second world war. Aina described the use
of statistical packages for the social sciences (SPSS) in a bibliometric study of the bibliography of scientific research.\textsuperscript{10} In the field of anthropology, a citation study has been made by Rana\textsuperscript{11} from a sample of 272 articles published in the 'Man in India', during 1970 and 1979 to find out the trend in citation pattern. The study revealed that the authors consult mostly the literature in the English language, mostly books are cited and most of them are from their own subject. Most of the citations are more than one decade old.

Persson has analysed the publication of articles by Scandinavian authors using social citation index. An online search in SSCI revealed a stagnation of article production from the Scandinavian countries during the late 70s. This may be due to increase of applied research, financed by non traditional research councils. Economics is the discipline that produces the largest number of articles in non-Scandinavian journals. Sociology is much more oriented to a Scandinavian journals, even when they are in English, are mainly cited by other Nordic Periodicals.\textsuperscript{12} Doreian analysed 2 journal-to-journal matrices for psychology in 1950 and 1960 in terms of structural equivalence. Structurally non-equivalent positions have a strong correspondence with a categorisation based on the intended audiences and objectives of these journals, supporting the hypothesis that journals of a discipline function as a status-role relational system. It supported the hypothesis that inter-disciplinary journals are distant from
journals of a field, but not the hypothesis that journal networks have a core-periphery structure. The network of psychological journals has a discernable core, but not a clear core periphery structure.\textsuperscript{13} It is generally assumed the cocitation studies of specialities and fields yield valid representations of intellectual structure. To test the validity of this assumption, 5 years aggregate cocitation data for 41 years in macroeconomics and 49 authors in drosophilo genetics were compared with independence judgements of inter-author similarity collected from 41 macroeconomists and 15 geneticists via a card sorting technique. Non metric multidimensional scaling (ALSCAL) and Johnson's 'smallest diameter' clustering were used to create 2-dimensional cluster-enhanced maps. In macroeconomics, differences between maps and clusters represent the influence, on judgements of individual authors-perceived policy orientation.\textsuperscript{14} In a study, Hurt examined three disciplines and their literature to determine if there were any differences in methodological referencing patterns. Physics, engineering and sociology were examined using the literature of the disciplines for the year 1983. Results indicated that physics differs from both engineering and methodological references. There was no significant difference found between engineering and sociology.\textsuperscript{15}
The failure to distinguish between primary and secondary sources in bibliometric analyses of humanities scholarship renders the usefulness of their results for collection development questionable. McCain reported the results of a citation analysis of a sample of 27 historical and historiographic articles from technology and culture (1967-77) used to study the distribution of secondary source citations across disciplinary boundaries. 47% of citations were to secondary sources. Hasso found by means of citation analysis that archaeologists cite journal materials less than non-journal materials. He further discussed that Bradford-Zipf studies show a rather high average time-lag between publication of an article and its appearance in the secondary service. In response to the increased amount of literature expressing the sense of crisis in anthropology over two decades (1963-1983), J.M. Choi undertook a citation analysis to examine intra- and interdisciplinary communication patterns indicated in core anthropology journals published in the USA. The analysis revealed that disciplines of anthropology seem to be quite heterogenous and mutually isolated from one another and the 'holistic' study of man appears to be only a rhetorical claim. Interdisciplinary analysis yielded about a 70% centrifugal tendency; that is 70% of cited literature in anthropology was drawn from other disciplines. History, biomedical, sciences and sociology seem to have most influence on anthropology. In another study Choi analysed that the
patterns of collaboration and affiliation of authors of the major US, anthropology periodicals are found to be paralleled to those of citations reported in the previous study in terms of subdisciplinary and disciplinary interactions with other disciplines. The dominance of outsider is found to be most severe in physical and linguistic anthropology, while sociocultural and archaeological anthropologists seem to be able to maintain their intellectual identity.19

R.Over assessed relationships between age and scholarly impact by determining the number of times single-author articles published in 'Psychological Review' between 1965 and 1980. There were substantial individual differences in citation rates. Although the majority of articles in 'Psychological Review' were published by authors under the age of 40, such a bias is to be expected in terms of the age distribution of American psychologists. When allowance was made for the number of authors in different age ranges, older authors were no less likely than younger authors to have generated a high-impact article (an article cited 10 or more times in the 5th year after publication)20. Dosary used a method which is an extension and refinement of citation analysis to analyse the citation patterns of political scientists in relation to variations in their research approaches. Research articles in political science were operationally classified as to their analytic disposition into behavioural or traditional,
and as to their method of research into quantitative or nonquantitative. Analysis of variance showed that differences in research approaches were a significant predictor for 6 of 10 citation variables examined. Journal citation rate was higher for behaviouralists than traditionalists. Behaviouralists cited literature of greater median age than traditionalists, and the nonquantitative group cited a higher percentage of nonpolitical science subjects, had a higher journal citation rate, cited literature of lower median age and cited more non-English literature than did the quantitative group.  

Peritz reviewed the changes in the characteristics of the demographic literature between 1964 and 1984, by means of statistical comparison of the entries in 'Population Index' for the subjects pertaining to population movements, the development of epidemiological research, the rising cost of book production and the increasing use of English language in foreign journal.  

The relationships between social science disciplines were the focus of the work by Hamelman and Mazze, summarized in several articles in the early 1970, in their exploration of cross citation patterns.  

The authors of articles in economics journals seldom cited work outside their own field. A new journal in 1972, the 'Annals of Economics and Social Measurement', had as its purpose to serve as an interface between economics
and statistics, management science and information science. 

Eagly's study showed that core journals have a degree of emphasis on theoretical fields, and serve as network feeders. Bush identified 14 most important journals and compared this result with the data of a Delphi study, finding similar results. Mc Donough compared several criteria of journal quality, including institutional affiliation of authors, peer evaluation especially familiarity, reading list citations and journal citations. She concluded that the best estimate of the true ranking is provided by the order of the sums of the ranks of these various criteria. However, due to the larger number of new journals in the early 1970s in economics, the relative rankings may be changing.
REFERENCES


5. MARK (Frances M). Characteristics of the literature used by contributors to American and English Economic journals. Master's dissertation. 1956, University of Chicago.


7. EARLE (Penelope) and VICKERY (Brian). Social science literature use in the U.K. as indicated by citations. J Doc 25; 1969; 123-141.


18. CHOI (Jin M). Citation analysis of intra and interdisciplinary communication patterns of anthropology in the USA. Behav Soc Sci Libr 6, 3/4; 1988; 65-84.


25. BUSH (W C), HAMELMAN (P W) and STAAP ROBERT (J). A quality index for economic journals. Rev Econ Statist 56; 1974; 123-125.


...