CHAPTER – III
REVIEW OF RELATED LITERATURE

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3.0 Introduction

The review of literature is an important component of any research study. It helps the researcher to frame the research study on the chosen topic by providing new ideas, concepts, methods, techniques and approaches. Review of literature suggests new avenues of approach to the solution of a chosen problem. In this chapter, an attempt has been made to provide a comprehensive review of related literature on the chosen research topic. For this purpose, a retrospective search of literature was made using Library and Information Science Abstracts (1970-2002). Attempts were also made to trace and collect the relevant original research papers and related documents, journal articles, conference papers etc. The literature pertaining to the chosen topic has been organized into 14 facets for easy review.

3.1 Growth of Literature

Wood and Ferguson¹ give the detail statistics of social science periodicals, which is useful to know the growth of social science periodicals. Bath University², in its report highlighted the size, growth and composition of social sciences literature. Meanwhile, Line and Roberts³ has also studied the size, growth and composition of social science literature on the basis of analysis of the available statistics of serial and monograph publications in social sciences up to 1973, data for which were gathered as part of a wide-ranging project concerned with the Design of Information Systems in the
Social Sciences. They observed the serial titles took exponential growth of 3.44% per annum between 1920 and 1970 with wide variances between periods and subjects. The average annual mortality rate of current titles was 0.5%. There was a much more rapid growth in numbers of secondary services than in those of primary serials, and social science monographs experienced the greatest overall linear increase but with huge variation between countries. Further, the number of articles and pages in serials increased significantly. According to Roberts and Chak⁴, in the international List of Geographical Serials (ILGS) in 1970, there were some 640 active primary titles published, together with another 500 or more currently appearing in a variety of forms on a less regular basis. Between 1945 and 1970, the growth rate of all serial titles was 4.5% per year. Chengren⁵ presents statistical results of the growth and scatter of literature on microcomputers in library and information services during the 14-year time span (1973 to 1986), and observed that the growth of the literature reveals the development of application of microcomputers in library and information services. Corbeil⁶ observed that Anthropology periodicals, appearing in Ulrich’s, in which the majority in English and realized that anthropology is a multidisciplinary field and has spawned many new specialties. A few anthropology titles offer indexes and many did not meet the basic criteria outlined in indexing guides, nor did they conform to indexing standards.
Braun\(^7\) determined the growth in the use of the term 'globalization' in the titles of periodicals articles published in the period from 1989 to 1995 by using Social Sciences Citation Index. He concludes that the growth has been exponential with a doubling time in the social science literature of 2 years. Khan and others\(^8\) observed that LIS literature in Bangladesh during 1966-1997 consisted of a total of 308 articles, authored by 116 librarians and that those articles were published in various periodicals with the highest number (256, (83%)) in Bangladesh, followed by India (21, (6.82%)). All these papers were published in 37 periodicals originating from 14 countries. About 92% of the articles were credited to the single authorship and only 25 articles were coauthored. Sangam\(^9\) has made an attempt to identify the growth indicators on six subjects, viz., Sociology, Economics, Political Science, Psychology, History and Anthropology. Sangam and Keshava\(^10\) determined the rate of growth of the Social Science literature by calculating relative growth rates and doubling time for publications. Sangam and others\(^11\) have studied the growth and dynamics of growth of Indian and Chinese publication in three sub-disciplines of social science, viz., Economics, Psychology and Sociology through growth model as suggested by Egghe and Rao (1992). They conclude that logistic and power model in economics, logistic model in Psychology and power model in sociology showed the best fits in growth of Indian social science literature. In case of growth of
Chinese social science literature, the best fits were shown by logistic and power models in economics, logistic model in psychology and logistic and Gompertz model in psychology and logistic and Gompertz model in sociology.

3.2 Characteristics of Literature

Artus\textsuperscript{12} has reported the social character of different processes leading to the derivation of quantitative data or indicator from databases. The study also indicates how a social process is taking place in systematic organizational structure. The genesis of such data cannot be reconstructed as a sort of mechanical application of formal rules but only as a human action. Moreover, the study reveals that as a consequence the discussion of such data or indicators cannot support by sociology. Hicks\textsuperscript{13} found that the centrality of books in social science literature and high citation rate, and the national orientation of social science bibliometric, that is, increasing internationalization and good average of scholarly journals are the main reasons why social science bibliometric is problematical. Moreover, the study reviews social science bibliometric literature to seek characteristics of the social science literature and to understand their consequences for the coverage of literature in databases. Nicholas and others\textsuperscript{14} state in their paper ‘Characteristics of social science serial title’, the construction and analysis of a file of social science serial titles, the construction and analysis of machine
readable data base for social science serials, the method of data collection used in CLOSS (Check List of Social Sciences Serials) the type of data recorded, and editing and programming procedure. The study presents a statistical analysis of CLOSS mostly based on the contents of 5,504 records. The results indicate various characteristics of the social sciences serials literature, like frequency of publication, number of articles, form and contents. Popovich\textsuperscript{15} has studied characteristics of business management on the basis of 2,805 citations drawn from 31 dissertations of PhD candidates in the field of business/management to determine publication form, periodical title, subject, time span, language, and publisher. In addition, information was gathered to reveal the extent to which the State University of New York at Buffalo libraries owned materials. Lee and Pao\textsuperscript{16} feel that the humanist relies heavily on recent publications and that monographic and journal publications are of equal importance. They suggest that better CAS may benefit humanists more. Their study shows the bibliometric study of journals articles on the American Revolution by using the item contained in a standard indexing journal. Results indicate that a larger group of journals is devoted to American Revolution than is generally suspected. Moreover, a substantial number of journals of high equality are found to be productive in that area.
3.3 Research Trends

According to Rees and Potter\(^\text{17}\), in the field of social sciences research in Canada, Canadian-to Canadian citation links are stronger than Canadian to non-Canadian and non-Canadian to Canadian links, and French and English speaking social scientists differs in their citation patterns. Nagata\(^\text{18}\) found that in the Japan Psychological Abstracts (JPA) during 1979-81, 97(24\%) i.e. almost all productive authors, belong to famous Japanese universities. 34 of the 40 psychological journals were published in the USA and 4 in the UK. 1,300 members of the JPA belong to the sub field of perception, physiology, thinking and learning and 243(61.8\%) papers were published in the subfields. McGhee and others\(^\text{19}\) show how on-line databases can be used to provide a general picture of the current state of research or research trend within a particular subject discipline. They chose cognitive development and the PsycINFO database to determine the frequency of publication of articles during the years 1976, 1978 and 1980 in 6 highly representative periodicals. Courtial and others\(^\text{20}\) highlighted changes in the scientific themes of the psychology by using co-word analysis of the key words of 6055 articles on the psychology of work from 1973 to 1987 that were listed in the PASCAL database. They observed that co-word analysis constitutes a new tool in the science policy arena. Goel and Garg\(^\text{21}\) observed that Social Sciences Citation Index includes more number of papers published in Indian journals written
by Indian social scientists; most of the papers are published in low impact journal and have a low citation rate. Anthropology, psychology and psychiatry are the areas where social science research is taking place in India rather than any other social sciences area. According to Liniers and Franco, in the articles published between 1976 and 1992 in Spanish journals on Spanish history (1939 to 1975), political studies predominated with 52% followed by cultural studies with 17.4%. The chronological distribution of articles was irregular over the period with surges in 1985. Two journals, L'Avene and Historia were the most productive, and academic publishers accounted for 36.4% of the articles. Of 342 authors involved, only 3.1% had published more than three articles. It shows the research trend in the field of social sciences in Spain. Nilson, in his paper entitled 'Social science research in Canada and federal government policy: the case of Statistics Canada' states that the documentation from Statistics Canada and in cover with agency officials provides a third view of anticipated or observed effects of change in data accessibility. Looze and others, on the basis of 671 articles published over 4 years in 258 journals, determined the visibility of social science journals in which the researchers of the Institute National de la Recherche Agronomique (INRA) publish regularly. Hsia presented a bibliometrics analysis of the papers of 3374 authors taken from Bibliographies of History. The study shows the linear distribution of history.
researcher and their research results. The author also stated that these would be useful for estimating academic achievement, predicting research progress and improving research production in the humanities. Suriya has studied research trends in distance education on areas such as concepts and theories of distance education; areas applications; psychology of learning; levels of applications; special learner groups; methods of teaching; support services; course development; choice of medium and economics of management. The European countries accounted for 40% of total research productivity on DE, followed by North and South America (23%), Asia (18%), Oceania (16%) and Africa (3%). Cronini and Mangematin proposed a method for identifying and describing the competencies of a Social Sciences Research and Teaching Department in a university. Sangam and Kadi have observed the growth of research and priorities of Demographic research in the different countries of the world, viz., USA, UK, India, China etc during the period 1986-2000. They have chosen appropriate growth model to fit the time series data in order to study the trend of growth of subject and each sub field for each country. Their results show that over a period of time the gross publication of literature in the area has considerably increased.

3.4 Collaborative Research

Budd and Seavy, on the basis of SSCI for the period 1981-92, point out the indicators of library and information scientists publishing and
citation activity. The authors examined both individual productivity and institutional productivity. The study presents rankings and per capita publications, and also calculates citations. Choi has observed that patterns of collaboration and affiliation of authors of the major US anthropology periodicals are parallel in terms of sub disciplinary and disciplinary interactions with other disciplines. The dominance of external authors is severe in physical and linguistic anthropology while sociocultural and archeological anthropologists seem to be able to maintain their intellectual identity. Dubiani and others examined 4089 citations in 28 master degree theses in the field of library and information science accepted by Saudi Universities during the period of 1979- to 1989 and found that researchers tended to use books rather than other publications. Further, the cited documents were not the latest publications. Gupta and Karisiddappa state that in theoretical population genetics the number of collaborators per author did not prove to be a good substitute in Lotka’s distribution. Gupta and others again given the statistics of scientometrics research in India in the field of social sciences in terms of authorship patterns, institutional and individual productivity, forms, language of publication, collaboration and affiliations. Haan observed, on the basis of Dutch sociology from 1939 to 1987, regarding authorship patterns that single authors wrote most publications. The network analysis of co-author relations for 2 seven-year
intervals and 1 six-year interval distinguished 37 clusters with 3 or more members. The International Bibliography of the Social Sciences covers a large number of monographs on social sciences published by a very small number of countries and in a small number of languages\textsuperscript{35}. Kretschner and Gupta\textsuperscript{36} point out that the characteristic properties of general social networks are reflected in co-authorship patterns of theoretical population genetics as studied from 1900 to 1980. Bibliographies where the co-authorship networks in invisible colleges have the same behavioral patterns as the non-scientific populations. The patterns of behavior are portrayed in two dimensional as well as three-dimensional representations of co-authorship data in theoretical population genetics. Karisiddappa and others\textsuperscript{37} have opined that in the Psychological Abstracts (PA) for 1988 the proportion of single authored papers has fallen from 84% in the 1920’s to 55% in the 1950’s and to 39% in 1988, indicating the trend towards multiple authorship. Moreover, the pattern of authorship was found to vary from one subject to another. Smart and Bayor\textsuperscript{38}, in their paper ‘Author collaboration and impact: a note on citation rates of single and multiple authored articles’ states that the acceptance rate of articles, which are collaboratively authored, tends to be higher than that for single authored papers, thereby suggesting a positive relationship between collaboration and quality. According to Wouters and Leydesdorff\textsuperscript{39}, Scientometrics journal displays the characteristics of a social
science journal. Its price index amounts to 43% and is remarkably stable over time. A single author has written the majority of the published items in 'scientometrics'. The network of co-authorship is highly fragmented: most authors cooperate with no more than one or two colleagues. Gupta and others40 traced the growth, collaborated and funded research as reflected in research papers in the specialty of theoretical population genetics research from 1916 to 1980 through a case study. They analyzed the proportion and extent of collaborated papers, average number of author per paper, and collaborative co-efficient index of research papers, thereby giving an overall perspective of the growth of professionalism in the field. According to Frey and Pommerehne41, American economists hold a dominant position among eminent economists. Among living economists, the share amounts to more than two thirds and over one half of all eminent economists since 1700. The reason for this was the favorable condition for good research, which in turn was based on the beneficial economic, political and social framework. Bonzi42 has observed the trends in research productivity among senior faculty. According to him, productivity is related to status and academic discipline. Increase in productivity among females is greater than that among males, but, on the whole, males are more productive. Humanities and science/mathematics faculties increase productivity to greater extent than social sciences and professional school faculties. Journals are cited more
often than books. This shows that the faculties do not publish in journals and that they do not show a high citation count. Sangam, on the basis of PsycLit CD-ROM Database 1975-98, who has studied collaborative research in psychology in India, finds that there is a high degree of collaboration in psychology research in India. Sangam has further discussed the authorship pattern, degree of collaboration, coefficient and collaborative index in sociology and its 33 different sub fields. Sangam has also studied the IGIDR scientists' collaboration between research group within a department, between departments within some institutions, between institutions, between sectors, between geographical regions and countries. His results indicate that most of the collaborated research works are the outcome of funded projects.

3.5 Institutional/ Individual Productivity

According to Bevan, the sheer volume of extra-MARC material creates a major problem for automated systems, particularly for such cooperative centers as LASER and the Birmingham Libraries co-operative mechanization project which looking for ways to coordinate the production and dissemination of machine readable records. Rushton and Meltzer evaluated 169 universalities in the UK, Canada and USA in terms of their productivity across all disciplines. Above all, the authors mentioned 10 most productive universities. They found that 15 of the most productive 100 universities were from the UK, and 11 were from Canada. The study also
reveals the information about the university's revenue and date of foundation, number of faculty members, and the number of publications and citations to, and the faculty members in the psychology department. Buchanan and Herubel\textsuperscript{48}, who determined the relationship between bibliometrics and historical studies, examined community formation of scientific and scholarly communication through institutional affiliation historical and qualitative bibliometrics. They investigated the history journal \textit{Annales: Economie, Societe, Civilisations} for 1979-93, and found institutional and geographical mapping of school's contributors. They draw an inference that bibliometrics could be utilized to explore journals from the 18th, 19th and 20th centuries for the history of discipline, including library and information science. Coronini and Mangematin\textsuperscript{49}, proposed a method for identifying and describing the competencies of a social science research and teaching department. The method can be used to study the articulation between the department's different activities which can serve for strategic planning of future trends.

3.6 Coupling/Clustering

Small\textsuperscript{50}, described co-citation cluster analysis of a 3-year cumulation of the SSCI. Journal subset concentration measure was used to identify clusters of information science documentation contained in that database. Clusters identified by the journal concentration method also cohere in
natural way through cluster cocitation. Moreover, the study suggests how these data might be used in planning an agenda for research in the concerned field. Miwa and others, analyzed 200 psychological journals covered by Psychological Abstracts (PA) in 1979 by the classification codes of articles in each journal through the cluster analysis methodology. They observed diversity between two types of clusters that suggest that the names sometime lead to a false recognition of the characteristics of journals. Prabha and Lancaster made a comparative study by using the subject desalination and educational psychology, the scatter of periodical articles over periodical titles at 2 levels, the second level being a random sample of periodical articles cited by the first level. They applied several measures to compare the extent of scatter at the two levels. Some methods commonly used in bibliometrics produced conflicting evidence on whether the citing literature (1st level) or the cited literature (2nd level) was more scattered. They also used computer-intensive sampling procedure also known as Bootstrap method to estimate the scatter of the total cited publications from the scatter of the empirical sample. They show what percentage of periodical accounted for various percentages of articles at each level scatter. Only at the 90th percentile of articles did the percentage of periodical title in the cited literature significantly exceed that of the citing literature. According to Sen, so far all the equations for bibliographic scattering have been derived.
or formulated through item approach. As such, the selection is not randomized and there cannot be any empty source. The author presents a source approach with minimum of assumptions and conditions. Mubeen tested the concept of bibliographic coupling developed by Fano-and Kessler on the basis of research papers published in 2 important sub disciplines of economics: monetary economics; and welfare economics in 2 periodicals, *American Economic Review* and *The Economic Journal*. The coupling rate of the citations in *American Economic Review* was greater than that in *The Economic Journal*.)

3.7 Citation Analysis

Citation study, according to Baughman, is a systematic enquiry into the structural properties of the literature of a particular subjects. He explains that the structure of literature is a quality, and therefore it has a distinct characteristic. It is not a finished form; rather, it is a ‘continuing process within a literature system’. According to Cawkel, the age of cited literature appears to be dependent on the growth of the literature, the high percentage of citations to recent papers and the relative constancy with which particular papers are cited in successive years. Crawford described the methodology of co-citation analysis, which establishes a link between two documents by counting the number of times they have been cited together. The author found that in contrast with bibliographic coupling cocitation provides a
quantitative measure of the strength of relationships among papers over a period of time. Omoray\textsuperscript{58}, analyzed periodical articles cited in 18 social science theses submitted to the University of Ibadan during 1965-70 in order to determine how the authors of the theses were dependent on available resources in university library and to reflect the characteristics of the literature available in Nigerian libraries. His results indicate that 852 references were made to 852 articles in 203 periodicals. 23 periodicals provided just over 50\% of the references. The Nigerian Journal of Economics and Social Studies had most references i.e. 42\%. A large percentage of the articles were in English, mainly in periodicals published in the USA. The medium age of the references was 9 years. Nicholas and others\textsuperscript{59} discovered literature usage and interrelationships in the social sciences on the basis of 11041 references drawn from 297 monographs in their research project related to the Design of Information System in social sciences. Farrago\textsuperscript{60}, in his research paper ‘citation analysis on the basis of the two social science journals’, considers the language, age and document type of the most cited material on the basis of citation analysis of the 1975-76 issues of 2 Hungarian social sciences journals. Pinski\textsuperscript{61} studied the structure of social sciences literature through the bibliographic citation analysis. Line\textsuperscript{62} observed the structure of social sciences literature by analyzing of 59,000 references, 48,000 from 140 serials and 11,000 from
297 monographs. The study points out the interrelationship of subjects, countries, language and form of material; the decay of use over a period of time; the distribution of references among cited works; and the works that are most cited. Hipgrave\textsuperscript{63} reviewed the history of references and their information content, size, growth of social science literature used by the social scientists in their Ph.D theses. Pasquar’ella\textsuperscript{64} identified the journal titles most frequently cited by the population scientists who had published articles in 17 journals in 1977 to determine the comprehensiveness of various indexing and abstracting services with respect to the coverage of population periodical literature. According to Raman\textsuperscript{65}, in India, in the field of anthropology from 1970 to 1979, the trend in citation patterns was that the authors consulted mostly the literature in the English language; mostly books were cited and most of them were from their own subject. Furthermore, most of the citations were more than one-decade old. According to Summers\textsuperscript{66}, citation analysis is a method for identifying highly cited core journals and indicating the disciplinary structure and interrelations of journals reporting reading research. Garifield\textsuperscript{67} discussed the impact of the work and publication of de Solla Price. The author analyzed over 2,200 citations to his publication including 690 citations to his best-known book ‘Little Science, Big Science’. Oromaner\textsuperscript{68} observed the extent to which core journal articles were relevant to publication in specialty journal and the extent to which
professional rewards should be attached to getting them published in the *American Sociological Review, American Journal of Sociology and Social Forces*. Pindlowa\(^6\) observed that, with regard to research, Information Science appeared to be closest with sociology, education and history. Choi and University of South Carolina\(^7\) have written about analysis, content analysis, authorship analysis, and the nature of anthropology over two decades (1963-1983) in terms of general characteristics of citations, intra and interdisciplinary communication patterns, author collaboration and research orientations. Sub disciplines seem to be heterogeneous and mutually isolated from one another and the holistic study of man appears to be only a rhetorical claim. Interdisciplinary analysis showed about 70% of centrifugal tendency; authorship affiliation and research orientation analysis also revealed centrifugal tendency and fragmentation. Al Dosary and A Dosary\(^7\) have written that in case of citation pattern of political scientists, journal citation rate was higher for behaviouralists than traditionalists. Behaviouralists cited literature of greater median than traditionalists and the non quantitative 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. Choi\(^7\) opined that interdisciplinary communication patterns indicated in core anthropology periodicals published in the USA have been quite stable, but
interdisciplinary citation analysis of anthropology seem to be quite heterogeneous and mutually isolated from one another, and about 70% of cited literature in anthropology was drawn from other disciplines. History, Biomedical sciences, and sociology seem to have almost influence on anthropology. Sangam\textsuperscript{73} studied the information use pattern of researchers in the field of psychology on the basis of citations. Herubei\textsuperscript{74} states that History journals reflect the evolution of historical scholarship. As the historical discipline develops, it is undergoing a transformation in subject emphasis and in methodological procedure. Through a simple citation study, disciplinary and interdisciplinarity can be monitored in periodical literature. Aravinda and Pulla\textsuperscript{75} analyzed 3,807 citations appended to the review articles in \textit{Annual Review of Anthropology} during the years 1980-82 reveal that 57.53\% of the sociocultural anthropology literature is published in book form. Single author citations are more than multiple author citations. Ijary and Kannappanavar\textsuperscript{76} determined the periodical most profusely cited by Indian Clinical Psychologists by using all the citations appended to 155 articles published in 3 volumes of \textit{Indian Journal of Clinical Psychology} and found that 46 journals had been cited at least 5 times each. Bradlay and others\textsuperscript{77}, in their paper discussed the citations to and publications by 10 members of the full-time academic staff of the department of Information Studies, and showed that departmental publications were cited by a very
wide range of organization and in many countries with more citations in the social sciences literature than in the science literature. The periodicals in which publication or citations occur are in fair agreement. (Dorban and Vandenvenne\textsuperscript{78} found that in the bibliographies of 6 PhD theses in economics, 95\% of books and articles are less than 30 years old.) Purkayastha\textsuperscript{79}, on the basis of four issues of volume 39 of the quarterly journal \textit{Social Action} (1989), studied the affiliation and geographical distribution of authors; authorship pattern and average number of references; the main bibliographical forms cited; the ranking of cited periodicals; and the obsolescence rate of cited literature. Synder and others\textsuperscript{80} observed the place and role of citation analysis in selected disciplines in the social sciences including library and information science. They determined the percentage of articles devoted to citation analysis and developed an inductive typology to categorise the major few of research being conducted under the rubric of citation analysis. Thomas\textsuperscript{81} applied Pichappan's formation of Discipline Contribution Score (DCS) to social sciences literature with modifications to cater to the problems associated with low citation counts. The proposed modified formulation of the DCS calculation facilitates research in small research fields, and those literature characterized by low citations rates. Osarch\textsuperscript{82} observed that the citation analysis is one of the widely used bibliometric techniques to review the articles. The author treats
citation analysis similarly with particular reference to bibliographic coupling and cocitation coupling. According to Hider, anthropologists in UK make heavy use of books as opposed to journals and other forms of material. The half-life of disciplinary literature is not shortening at the rate at which publishing output rates are increasing. Dalen found that Scientists situated in the USA dominate the emergence of ideas in economics science. Beckman and Persson, constructed a citation matrix for the 13 most cited journals in economics from data in the Social Sciences Citation Index. The study reveals that the components of the eigenvector associated with the largest possible eigenvalue of the matrix defines the 'impact value' by which these journals may be ranked. According to Rowlands, the structure and dynamics of the information policy periodical literature diverges in several respects from typical social sciences literature. Very rapid growth, high immediacy, rapid reception and ageing process and relatively low documentary scatter characterize the information policy. Broadus found that English-speaking social scientists do not greatly depend upon research materials in other languages. Mahapatra and Musib, on the basis of citation appended to the research papers in Agricultural Economics contributed by US and Indian authors, found the amount of subject that influences the formation and development of agricultural economics. They conclude that the total citations of agricultural economics consisted of 70% from the
subject groups of social sciences and 30% from the subject groups of applied sciences and technology.) Sangam\textsuperscript{89}, identified the use of different forms of information sources, distribution of subject, core journals, aging of documents, ranking of journals and their availability at Karnataka University Library. He concludes that the results of the study imply the development of the need based collection in libraries in the field of social sciences. Sangam\textsuperscript{90} has noticed the communication pattern of Indian Historians through citation analysis. Aravind and Reddy\textsuperscript{91} reported that 57.78\% of the archaeological anthropology literature (1980-82) was published in the form of books, that citations with single authors were more common than those with double authors, and that literature scattered in 82 periodicals among which 52.18\% of research literature was published in 7 periodicals with \textit{American Antiquity} as the highest ranked periodical. Sangam and Karisiddappa\textsuperscript{92} have identified the citation pattern in different fields of social science. Verma\textsuperscript{93} observed that Indian econometricians gave equal importance to periodical and non-periodical materials for their research work and depended upon noncurrent research materials, and that the median age of citations range is from 12 to 15 years. Matpathi\textsuperscript{94} has studied the citation pattern in Economics. Sangam\textsuperscript{95} in his paper entitled 'Information use pattern of researchers in the field of History: a citation study', highlighted the major sources of information, core journals, language, subject, country of origin of cited
documents and applied Bradford's Law.

3.8 Ranking of Journals

Oromaner\textsuperscript{96} examined citation to articles published during 1960 in 3 'core' sociological journals, cited in 10 sociological journals from 1961-70. The study reveals that the articles were not cited at all, while only 11\% of the cited articles were cited in more than $\frac{1}{2}$ of the journals. Articles are more likely to be cited in core journals than in specialized journals. Further, he states that core journal may not play an integrating role within sociology and greater attention should be paid to the specialised journals. Gordon\textsuperscript{97}, who studied the problem associated with ranking journal in accordance with their relative importance, observed that Social Sciences Journal Citation Report could be an available aid to journal selection for libraries and information systems. According to Jones\textsuperscript{98}, citation studies are frequently used to examine the status of journals. Doreian\textsuperscript{99} feels that ranking of journals in a particular field are either objective or subjective. He states that if a richer set of variables tapping the evaluative base for journals, use them for the distribution of journal standing. He applied this to a set of psychological journals and found a basis for understanding the dynamics of journal evaluation and standing. Iruel\textsuperscript{100} studied the distribution of demand by journal titles; stability of ranked lists of requested educational journals and accessibility in Spanish libraries of the most requested journals in the
field of education in Madrid from 1985-88, and found that the 10 titles, most requested educational journals were stable over a period of time; and that the majority of collections of common journals in ranked lists were incomplete in Spanish libraries. Thaty and Mishra\textsuperscript{101} have studied most frequently cited periodical by Indian Agricultural Economists (1985-89) by analyzing the citations appended to 170 articles published in five volumes of \textit{Indian Journal of Agricultural Economics} and found that each journal was cited at least five times. Researcher also highlighted the types of publication cited, authorship pattern, country wise distribution of most frequently cited periodicals.

\section*{3.9 Obsolescence Studies}

Ravichandra Rao\textsuperscript{102} have observed the growth of periodicals and obsolescence of articles in the field of sociology. Rouse and Rouse William\textsuperscript{103} analyzing requests for monographs generated within an interlibrary loan network for half-life statistics, suggested that demand would represent use of the literature more completely than satisfied requests or circulation statistics. A negative exponential distribution adequately characterizes regional demand and statewide demand as a function of publication date for 4 subject categories. Corrected demand data was obtained by removing the growth rate of most of the literature represented by American book publisher output. A shorter half-life was found to be more
for regional library demand (10.47 years) than for statewide demand (15.75 years). Kaula and Singh explained the importance of ascertaining the characteristics of the information material used by a discipline's practitioners, and at the same time pointed out the dearth of such work in the social sciences, particularly in India. Gapen and Milner reviewed the literature of research in obsolescence. According to both of them, although practical results of research to date are of little value or use in daily library operations, that situation could change in future. Zimmerman has studied scattering and obsolescence in periodicals at 2 major libraries of Case Western Reserve University Cleveland, Ohio i.e. one science library and the other art library. Kutch has reviewed and briefly discussed the concept of thematic analysis and the applicability of thematic analysis to information science. He arrived at this conclusion by examining 4 thematic models of change of state of knowledge, as exemplified by terms such as literature obsolescence. The author selected 10 articles from the journal of American Society for Information Science for examination, and observed that several of these articles were shown to have thematic content, and that they exemplify the 4 models of change of state of knowledge. Hodowanec has investigated the annual book obsolescence rate for individual and institutional departments within a university. The analysis of such factors as immediacy and intensity of peak usage, use dispersion, and the commonality
of use have helped to develop an acquisition priority weighting formula. Malinconico\textsuperscript{109} states that librarians assume a useful life for a library automation system because of the high outlay they have made. Planning for the implementation of a new system should include plans for how it will be phased out so that an orderly transition to its successor can be achieved. Firth\textsuperscript{110} states in his paper ‘Keeping up with tofflerian obsolescence’ described the development of CANSIM (Canadian Socio-Economic Information Management System), an on-line data bank of Canadian socio-economic statistics, which aids do social science research in Canada. Line’s\textsuperscript{111} examination reveals that libraries are under greater pressure of space, but most modules are too complex and time consuming for them to use. Automated systems should enable such data capture. With virtual library, remote access may make weeding easier because wrong decisions could be easily reversed, but several conditions have to be met with before this could make much practical impact. According to Jager\textsuperscript{112}, older books do not exhibit the expected characteristics of obsolescence, and while a certain measure of decline of use with age was demonstrated, such decline may be reversed in time of decreasing resources or increasing demand for existing resources. The library could develop an informed weeding policy that would enable it to remove from the shelves those materials that have remained unused or little used for 25 years or more. Sangam\textsuperscript{113}, on the basis
of bibliometrics techniques applied to the data of 5 psychological periodicals, determined the relationship between growth and obsolescence. According to him the greater the growth of literature, the greater the obsolescence as well as the half-life. Lahary offers the history of the adoption of UNIMARC in France for cataloguing and reports on the current situation of its acceptance and the problems involved in its use. The author noticed some shortcomings in the official UNIMARC regarding linking techniques, standard access to publishers, procedures, distributors and brand names, and author title entries. Sangam has outlined the obsolescence factors in economics literature such as Annual Ageing Factor, Half-life, Mean-life, Utility Factor, and Correlated Obsolescence Factor for journal literature and books on the basis of citations in doctoral theses, which is helpful in collection development and in making weeding out policy in the field of economics.

3.10 Evaluation Studies

According to Pors, Political science, especially foreign and international politics uses more recent literature than sociology. From 1965 to 1973, there was an increase in the number of references, both in the Scandinavian and the foreign journals. Satariano examined citation pattern parallel to readership patterns in sociology. The study found that although there was some overlap between citation and readership, citation patterns
reflected a cross-disciplinary focus that was not found in the journal most often read. Moreover, citation studies underestimate the usefulness of popular social science periodicals, especially regional journal in sociology. Szalai\textsuperscript{118} has observed that research on research has become central to the sociology of science, which has become a subject in its own right. Oromaner\textsuperscript{119} investigated the US sociology which has recently experienced a shift in its cognitive structure. The author felt that various theory groups account for a relatively small number of the earlier theory groups are less of the emergence of one new theory group. Nisonger\textsuperscript{120} traced the history of citation checking approach to collection evaluation. He felt that the techniques constituted reliable and valid collection evaluation method. Peritz\textsuperscript{121} proposed a classification scheme for the roles of citations in empirical studies in the social sciences and related fields. The author applied the classification scheme to sociology, education, demography, epidemiology and librarianship. According to Brookes and Haitun\textsuperscript{122}, the application of modern statistical theory to social sciences data does not work at all. They felt that there is need to develop a wholly new statistical theory for the social sciences. Ali\textsuperscript{123} has observed that the authors of the articles of Indian library periodicals are repackaging the findings reported in overseas library journals in order to transmit information to practioners in India. Doreian\textsuperscript{124} written that Psychology in 1950 and 1960 in terms of structural equivalence,
nonequivalent positions have a strong correspondence with a categorization based on the intended audiences and objectives of theses and journals, supporting the hypothesis that the journals of a particular discipline function as status role relational system, and interdisciplinary journals are distant from journals of a field but not the journals networks have a core-periphery structure. Rice and others\textsuperscript{125} explained that citation analysis is a useful method for studying a wide range of topics in bibliometrics and the sociology of science. However, they do not agree on the validity and reliability of the data and the method of citation studies. The possible source of measurement error may in the discrepancies between the citing and the cited data. McGinty\textsuperscript{126} investigated the publishing patterns of political science monographs through an examination of journal citations. The author tallied and categorized all citations to monographs in the \textit{American Political Science Review} and the \textit{Journal of Politics} for 1974-75 and 1984-85. Citation of frequencies of conference proceedings unpublished sources, foreign language material, and government documents were explored. Spangenberg and others\textsuperscript{127} determined scientific productivity in Dutch economics Nijhuis and others\textsuperscript{128} tested the hypothesis concerning facilitators and inhabitants of scientific performance in Dutch economics and made comparison with large scale empirical studies in order to examine the external validity of the findings and the relationship with other
scientometrics indicators. According to Chressanthis and Chressanthis\textsuperscript{129}, higher manuscript submission fees prevent lower quality manuscripts from being submitted for publication review, resulting in higher quality papers being published, and in increasing journal quality ratings as affirmed by citation-based statistics for top ranked economics journals. Cronin and others\textsuperscript{130} analyzed the scale and significance of acknowledgement behavior in ten sociology journals over a 10-year period. They discussed functional and symbolic parallels between acknowledgement and citations. Peritz and Hebrew University of Jeausalem\textsuperscript{131} find out what features of a study make for differences in the citation frequencies among papers, namely, psychology. The results of the study indicate that as in earlier the selection of papers for citation is formed by national criteria: the presence of a new theory, model or analytic approach and the presence of a substantial literature review. According to Barre\textsuperscript{132}, Bibliometrics is a field which has a recognized potential as a social utility and in contributing to the science, but its weakness are in unstable supply and quality of data and a methodological and conceptual gap, linked to an insufficient coherence and accumulation of knowledge. Winclawska\textsuperscript{133} pointed out the inefficiencies of Garfield's Social Sciences Citation Index to measure the quality of a discipline in national context. He proposed an alternative measurement tool to the Garfield's index. The author selected sociology for the study and created an
Webster\textsuperscript{134} created a new bibliometrics tool i.e. \textit{Polish Sociology Citation Index} to aid the bibliometric analysis of Polish sociological literature which contains the source and citation data from 4 leading Polish sociological periodicals from 1956 to 1995. According to Glanzel and others\textsuperscript{135}, a serious shortcoming of bibliometric studies based on the SSCI is the lack of a universally applicable subject classification scheme so far as individual papers are concerned. Begaum and Sami\textsuperscript{136} have studied the scatter and seepage of literature in Psychology. They conclude that major research publications in Psychology are in the form of journal articles and the author's preferences for publication in Indian journals were high. Moreover, the literature of Psychology is interdisciplinary in nature, and nearly 483 journals out of 2,600 journals in the area produce at least one relevant paper. According to Buchanan and Herubel\textsuperscript{137}, in Indian universities political science Ph.D dissertations use materials indicative of their disciplinary interest, and are heavily dependent upon periodical literature.

\textbf{3.11 Comparative Studies}

Curtis\textsuperscript{138}, on the basis of citations and interlibrary loan requests, observed an exponential rate of decay with time in the use of the older biomedical and psychological literature. Line and Line\textsuperscript{139} investigated interrelationship of subjects, countries, languages and forms of material in
the social sciences, decay of use of information over time, distribution of citation among cited works, most cited serials, monographs. Swai\textsuperscript{140} has reported that there were 12,191 Japanese scientists affiliated to 344 different universities and colleges. They were 4,973(40.79\%) in health sciences, 4,331(35.53\%) in physical sciences, 1,675(13.74\%) in engineering sciences, 968 (7.9\%) in agricultural sciences, 84 (0.69\%) in other natural sciences, 160 (1.31\%) in social sciences and humanities. The universities of greater productivity in scientific research were: University of Tokyo (1,199 scientists), Kyoto University (919 scientists), Osaka University (837), Tohoku University (633), Kyushu University (534), Hokkaido University (486), Nagoya University (483) and Tokyo Institute of Technology (409).

According to Neeley\textsuperscript{141}, the management literature is dependent on the social science which is more dependent on them than vice versa and that is more dependent on them than they are on each other. Otsu\textsuperscript{142} made comparison between Japanese science and social sciences publications in SCI and SSCI and obtained types of publication and Institution, number of contributions by universities, country of publication, contribution of Japanese and non-Japanese journals, language of publication and subject distribution. Leavy\textsuperscript{143} compared the recency of periodical references in current natural and social sciences periodicals and found a medium half-life of about 6 years in both literatures. Diodato\textsuperscript{144} states that 4.4\% of psychology articles and 33.4\% of
mathematics article titles in a study of 4,506 articles published in 1982 contained at least 1 eponym each. In psychology 74 of 95 eponyms occurred in articles citing other works authored by the respective individuals associated with the eponyms. In mathematics, 688 of 1,105 eponyms occurred in articles citing other works having the respective names of the eponymous individuals in their titles. 16.8% of psychology article eponyms and 39.9% of mathematics articles eponyms exactly matched entries in at least 1 of their fields’ vocabulary lists. Mahapatra and Musib\textsuperscript{146} have studied the citations appended to the research papers in agricultural economics contributed by Indian authors and found that the total citations of agricultural economics consisted of 70% from the subject groups of the social sciences and 30% from the subject groups of applied sciences and technology. Hurt\textsuperscript{146} examined physics, engineering and sociology disciplines and their literature for the year 1983 in order to determine referencing patterns. He concludes that physics differs from both engineering and sociology in terms of having a greater frequency of methodological references but no significant difference is found between engineering and sociology. Hurt\textsuperscript{147} again examined physics, engineering and sociology disciplines and their literature for the year 1986 to determine the differences in conceptual referencing patterns. He found that physics, engineering and sociology differ in terms of conceptual references. Morales\textsuperscript{148} opined that SSCI virtually excluded publications of
Maxican researches in 6 different fields. Hence, there is need for Mexico and Latin America to develop national database with citations. Nederhof and others\textsuperscript{149} made an evaluation of the use of bibliometric indicators in Humanities, social and behavioral sciences in the Netherlands and pointed out that many articles were written in English, and that only experimental psychology, general linguistics, anthropology and general literature were internationally oriented regarding output media. Results indicate that for all disciplines, bibliometric indicators are potentially useful for monitoring international impact. Herubel and Buchanan\textsuperscript{150} opined that gender, institutional affiliation, productivity, ranking, obsolescence and format are commonly studied variables in social sciences. But humanity discipline has not been adequately examined in that context. Asami and Kurata\textsuperscript{151} studied the research activities of 2 Nobel Prize (1981) winners for medicine and economics to determine their career, publication record, type of publications, degree of co-authorship, research scheme, number of awards and citations received. In humanities and social sciences in Japan, distinct hierarchical relationships are recognized between disciplines. Based on the length of time the discipline has been established in Japanese universities\textsuperscript{152}. Stevens\textsuperscript{153} observed the relationships between social sciences and planning literature and found that an information source used in the academic planning literature has moved away from sociology towards economics.
Bonzi and Snyder\textsuperscript{154} have studied the patterns of self-citation in 4 disciplines, 2 each from the 'physical' sciences and the social sciences to examine overall patterns of citation, age of references and the patterns of self-citations. Andrade\textsuperscript{155} gave the selection criteria that would help to the acquisition and incorporation of titles in social sciences and humanities library collections. Villagra\textsuperscript{156} have reported that in the areas of social sciences and language sciences (1986-88) of Spanish university's productivity ratio, publications/authors ratio, co authorship, the type of document edited shows the increasing rate of production achieved and stagnation in the number of authors, and a restricted diffusion in periodical publications as compared to the geographical and cultural variety of Spain. Bonzi\textsuperscript{157} observed that in Syracuse University research productivity among females was greater than that of among males, but males were more productive overall and that the productivity of Humanities and Science/Mathematics faculties increased to a greater extent than that of social sciences. Alcain and Millan\textsuperscript{158} reviewed the state of the art in bibliometric studies in the fields of social sciences and humanities in the light of the result of literature searches of major international online databases in the fields of library and information science, social sciences and humanities. They concluded that Library and Information Science Abstract was the most productive database. Cronin and others\textsuperscript{159} studied the scale and
nature of acknowledgement behavior in history, philosophy, psychology and sociology over a period of twenty-five years and found the cross-disciplinary similarities and differences. A relatively strong correlation was found between contact and frequency and international publishing activity among researchers in small countries in the field of natural, medical and social sciences, technology and the humanities. Roman and Mendez examined the political transition by using the articles published by Spanish authors in Spanish journals of social sciences and humanities. They used a sample of 11,000 article references from a selected set of 32 journals published from 1976 to 1985. Yitzhaki felt that the most common measure of title in formativeness has been the number of substantive words included in it. The author investigated by sampling a large group of journals from different areas spanning over 6 decades whether a paper signed by a larger number of authors have more substantive words in its title. In the social sciences journals and, to a greater extent, in the humanities journals a significant positive correlation was limited to only a few periods, while the rest had a very low correlation or negative correlation. Marshaleava and Russian Academy of Science investigated the research activity of 90 countries and 150 cities in the fields of social sciences and humanities to evaluate Russian contribution to the progress of the world of social sciences. According to Glanzel and Schoepflin, the obsolescence of social sciences periodicals is
slower compared to medical and chemistry periodicals. The behavior of mathematical periodicals is similar to that of the ones in social sciences. Ageing seems to be specific to the field rather than to the individual periodicals. Slow ageing does not necessarily correspond with slow response. According to Lindholm\textsuperscript{165}, cross-disciplinary scholarly communication in the social sciences and humanities within a theoretical context of the sociology of science flow varies across disciplines in speed, direction, and volume. Da-Conturberia\textsuperscript{166} studied a Business Periodicals Index and SSCI for the decade 1983-1992 to determine which journals provide the greatest coverage of the European Community. The study found that both databases show a remarkable increase in the number of EC articles published over a decade. The Economist, indexed by both databases, contributed almost one third of the total number of articles. Verma and Murthy\textsuperscript{167} have studied the use of literature by research scholars in political science and economics. Glanzel and Schoepflin\textsuperscript{168} stated that the percentage of reference to serials proves to be a sensitive measure to characterize typical differences in the communication behavior between the science and the social sciences, and that there is an overlap zone, which includes fields, like mathematics, technology oriented science and some social sciences areas. Garfield\textsuperscript{169} studied conceptual and historical views of citation indexing, the design and production citation index; mapping the structure of science; citation analysis
of scientists and scientific journals and future of citation indexing.

3.12 Application of Laws

*Bradford's Law*

According to Raghavan and Shalini\textsuperscript{170}, rationalization of periodical holdings on cost-effectiveness study is an important process. They quote an example of B.C. Brooke's mathematical model based on Bradford's distribution phenomenon for cost effectiveness studies. Brookes and Leimkuhler\textsuperscript{171} argue that powerful operational research techniques operate only a small fraction of the statistical information usually provided by the social sciences. For example, Leimkuhler's claim to have found an exact fit to Bradford's Law. Tenopir\textsuperscript{172} analyzed 40 databases and applied Bradford's law to determine the percent of false drops and rank the databases. He found that no one database provides more than 19% of the literature, and that literature was widely scattered throughout databases. Brookes\textsuperscript{173} observed that Haitun recently showed the empirical distributions which were of 2 types- 'Gaussian' and 'Zipfian'-characterized by the presence or absence of moments. Gaussian type distributions arise only in physical contexts; Zipfian only in social contexts. As the whole modern statistical theory is based on Gaussian distributions, Haitun showed its application to social statistics, including the cognitive statistics which is inadmissible. Naranan\textsuperscript{174} points out that by using rigorous statistical tests, the number of periodicals carrying...
papers in a given subject can be expressed as a simple power law function. Boer and Dosa\textsuperscript{175} applied Bradford's Law to the purchasing of periodicals in libraries of all sizes. They selected 16 periodicals devoted to 4 related fields (economics, trade, finance and marketing) for their study. Their results indicate that a cost saving of subscriptions to journals of 39\% is possible. Coleman\textsuperscript{176}, in his paper 'Bradford distributions of social science bibliographies varying in definitional homogeneity', ranked 6 social science bibliographies along a complex ordinal dimension of the homogeneity of the defining criteria for including items in a bibliography. According to Alvarado\textsuperscript{177}, Bradford's Law is widely used in collection development to identify the most productive periodicals, but he does not take into account the variables of frequency of publication and the number of years of publication during a particular time span. Hence, not all periodicals necessarily have the same opportunity to publish relevant articles. Wagner\textsuperscript{178} described the Bradford's Law and the dispersion of subjects inside a periodical. The author observes that the phenomenon of subject hierarchies for periodicals in 20th century psychology and mathematical logic and for 5 periodicals in 19th century mathematics, taking Pare distribution instead of Bradford's original rank size distribution. Basu\textsuperscript{179} described Bradford's Law of Scatter and its application in the field of documentation. He discussed several other 'informetrics' laws and their kinship with Bradford's
theoretical foundations in the fields of linguistics, economics and scientometrics. Sangam applied Bradford’s Law to the psychology citation data.

**Lotka’s Law:**

Nicholls proposed two modifications to the Pao procedure for testing Lotka’s law and applied them to 15 samples drawn from the humanities, social sciences and sciences. Kyvik examined productivity differences among individual researchers are larger in some fields of learning than others. He compared the productivity patterns in the natural sciences, medical sciences, social sciences and humanities by the use of unweighted and weighted publications counts. Finally he concludes that about 20% of the tenure of the total output, and the most prolific half of the researchers account for almost 85% of the output. Gupta tested Lotka’s Law on the basis of an author productivity study of a database consisting of 611 articles on African psychology for the period 1966 to 1975. The author used 2 files one, consisting of contributions according to first authors, and the other consisting of contributions of the entire author. It was found that Lotka’s Law in its original form could not be applied to either of the files.

### 3.13 Librametrics, Bibliometrics, Informetrics and Scientometrics

Narin and Moll discussed Bibliometrics data publications, references and citations, procedures of scientific publications journal
classification, clustering, influence measurement, reference and citation
coupling and linguistic analysis of keywords and concepts, and further they
explained the application of bibliometrics techniques in librarianship and
information management. According to Lawani\textsuperscript{185}, the first bibliometrics
study appears to have been made by Cole and Eales in 1917 when a
statistical analysis of comparative anatomy literature was published during
1855-1860. Soyibo and Olubode\textsuperscript{186} studied and classified recent theoretical
contributions to bibliometrics and discussed their reasonableness,
appropriateness and exactness, by using the decision maker/end user-
oriented focus. They stated that because of similarities in the application of
mathematical abstracts to economics and to information science, discussed
the possible economic implications of some recent contributions and the
constraints on their applications. Pritchard and City of London
Polytechnic\textsuperscript{187} compiled a comprehensive bibliography on bibliometrics as a
by-product of a research degree, and they state that it will supercede the
1969 publication statistical bibliography: an interim bibliography. In the
bibliography citation data is available and a computer file exists up to 1964.
Kirby\textsuperscript{188} on the basis of American Book Publishing Record a sample of
monographs on US history, published in 1984, and each of the 291 unique
titles was checked against Book Review Index to determine pre- and post
publication reviews of the monographs concerned. The productivity of the
journals is presented in the form of a Bradford's Law of Scatter ranking, with 3 zones. Robinson\textsuperscript{189} opined that citation analysis might be an effective tool of journal selection for the research scholars who are engaged in publication process. Citation patterns can be used to determine the extent of bibliographic coupling between an author's unpublished article and journals in the author's field. According to Sengupta\textsuperscript{190}, bibliometrics, informetrics, scientometrics and librametrics are 4 measuring techniques in library and information science. These are analogous, or, rather, synonymous, terms with intermingled aims and objectives, and as such they need some elucidation. Huanwen\textsuperscript{191} studied a bibliometric analysis of periodical articles in the field of library and information science published in the Chinese People's Republic from 1985 to 1994 to determine how the research articles are distributed over various topics; and what research methods were applied; what similarities and differences exist between LIS research in the Chinese People's Republic and in the rest of the world. Casado and Moreno\textsuperscript{192} have studied bibliometrics indicators, e.g. currency, half-life, price index, typology and subject matter of documents, dispersion; and multidimensional indicators i.e. maps derived from citation and co-word analysis to describe library management. Aman\textsuperscript{193} on the basis of ISI publications Arts and Humanities Index, SSCI and SCI (from 1986 to 1995), studied the production of academic researchers in Kuwait by using bibliometric method.
Rowlands\textsuperscript{194} investigated the structure and dynamics of the information policy. Periodical literature diverges in several respects from typical social science literatures. The study focuses very rapid growth, high immediacy, rapid reception and ageing process and relatively low document scatter. Al-Haddad and others\textsuperscript{195} have studied the textual significance of ‘Alam Al-kutub’ the most important periodical in the field of library and information science in the Kingdom of Saudi Arabia as compared with other periodicals in the field. It presents the key features of the most cited authors and the cited periodicals in accordance with Bradford’s Law. Roman\textsuperscript{196} discussed the indexing terms as indicators of scientific knowledge and presents an approach analysis and evolution of subjects. Biradar and Premalatha\textsuperscript{197}, who have undertaken a bibliometric study of psychiatric literature, find that 73.22\% literature in the form of periodical article, English predominant journals language(97.61\%) and 99.31\% of literature published during last 20 years constitutes almost 64\% of the total literature.\textsuperscript{198} discussed the importance and scholarly nature of Indian Journal of Agricultural Economics (1983-92) and identified collaborative authorship, subject specialization, geographical location of contributors, most cited journals, geographical origin of cited journals, subject dispersion of cited journals and age of cited journal.
3.14 Variation within Social Sciences

Small and Crane\textsuperscript{199} applied the techniques of cocitation cluster analysis to a special 3 year (1972-74) file of the Social Science Citation Index and found that knowledge is developing in some part of the social science discipline in a manner similar to that of the natural science. Miwa and others\textsuperscript{200} conducted a study on SSCI 1977 and 1972 to determine the number of references per article, form of references, obsolescence, title dispersion and subject dispersion in economics, education, law, political psychology and sociology. They observed that the average number of references per article was 11.5\% in 1977, 2.7\% higher than that in 1972 in SSCI 1972. The number of references to periodicals increased and references to books decreased between the 2 (1972 & 1977) years. The half-life of the total references increased but there was no change in the title dispersion. Turner and Kiesler\textsuperscript{201} have observed that the basic research in the social sciences has had a substantial impact on education literature. Empirical data on citation patterns in the education literature largely consists of this proposition. Small\textsuperscript{202} described a cocitation cluster analysis of a 3 year (1975-77) cumulation of the SSCI and clusters of information science documents, using a journal subset concentration measure. The author found that clusters identified by the journal concentration method cohere in natural way through cluster cocitation. Peritz\textsuperscript{203} asked whether methodological papers published
in core sociological periodicals (1972-73) were more frequently cited than theoretical or empirical papers. His study revealed that such was indeed the case. Moreover, the result was not due to a few outlying very highly cited papers. According to Klaase\textsuperscript{204}, in sociology the number of periodical articles lacking adequate titles was 15\%, in library and information science, 21\% and in law, 18\%. In the Netherlands, the law librarians urge legal publishers and editors to improve their practice in that respect. The author felt that with the arrival of the on-line publishers catalogue such reform would be essential. Pindlowa\textsuperscript{205} examined the influence of Information Science on the other social sciences on the basis of research productivity, and found that the connection of information science appeared to be closest with sociology, education and history. Over\textsuperscript{206} wanted to find out whether men and women produced research of equal quality; whether the proportion of women who being active in research make important contributions was the same as the proportion of men who being active in research, make important contributions. The results revealed that the majority of high-impact articles had been published by men, but so had most low-impact articles and there was no evidence of differences in terms of impact. Paisley\textsuperscript{207} identified co-citation clusters representing research specialists in communication as well as psychology, sociology, anthropology and political science and found that cocitation of these researchers proved to be higher in
communication than other literature. Pierce\textsuperscript{208} on the basis of 8,634 research articles appeared in economics, political science, sociology periodicals from 1886-1985 find out that the research articles shows disciplines mature. He also stated that variation in levels of use of footnotes, charts, tables and graphs decreased over a period of time.\textsuperscript{209} Warner and others, on the basis of citation analysis, observed the transmission of ideas across time in disciplines selected from the humanities and social sciences to trace the diffusion of ideas as they are embodied in monograph publications.

Rousseau\textsuperscript{210} states the relationship between information science and bibliometrics, scientometrics, and informetrics. He compared the above stated relationship with between economics and econometrics. Synder\textsuperscript{211} investigated the place and role of citation analysis in selected disciplines in the social sciences, including library and information science to determine the percentage of articles devoted to citation analysis and to develop an inductive typology to categorize the major foci of research that is being conducted under the rubric of citation analysis. He focused his attention on the validity of citation as an evaluation tool; and impact or performance studies of authors, periodicals, and institutions. Winclawska\textsuperscript{212} investigated inefficiencies of Garfield’s Social Science Citation Index to judge the quality of a discipline in national context. He proposed an alternative measurement tool to Garfield’s Index. Glanzel\textsuperscript{213}, on the basis of SSCI evaluated national
research performance in hard and life sciences by applying bibliometric methods. The areas covered were business, economics, psychology, and psychiatry, sociology, library and information science, philosophy of sciences and social sciences. Nederhof and Van-wijk\textsuperscript{214} introduced a new method to identify and map the internationally most visible research topics occurring in the social and behavioral sciences, as well as the topics, which changed most over a decade. Yilzhaki\textsuperscript{215} assessed the scope of the language preference in a social sciences field, among US, UK, German and French scholars, by using the technique of citation analysis. His findings reveal that the preference of writers to cite material in their own language is very strong. Nederhof and Van-wijk\textsuperscript{216} described a study that focuses the identification of high output research and high impact research in the social sciences and behavioral sciences also monitors development in research that is related to societal needs and problems. Sangam\textsuperscript{217} has studied the research communication pattern of political science research scholars and also compared it with the communication pattern of other social science research scholars.

3.2 Indian Context

It is a well known fact that information is one of the most national resources and the role of information in social and economic development is now widely recognized. User is one of the most important
components of an information system. User studies are being conducted on the behaviour of the user in seeking information instead of the needs of the user. The study of information seeking behaviour can stand on its own as an area of applied research where the motive for the investigation is practically related to systems design and development. There had been proliferation of literature on user studies since 1970’s onwards, though it had made its beginning as early as in 1920. Some consider that some studies were conducted even earlier to this also. But, they got more momentum since 1955. Verma and Muthy\textsuperscript{218} have studied the use of literature by research scholars in political science and economics. Kaula and Singh\textsuperscript{219} discussed the importance of ascertaining the characteristics of the information materials used by a particular discipline’s practitioners and narrated the dearth of such work in the social science, particularly in India. 5236 citations from 5 Indian scholarly periodicals are analysed, and categorized into bibliographic form, age and number of periodicals containing cited articles. Rana\textsuperscript{220} felt that the authors consulted mostly the literature in English language, that mostly books were cited, and that most of them were from their own subject, and further added that most of the citations were more than one decade old. Mahapatra and Musib\textsuperscript{221}, on the basis of the citations appended to the research papers in Agricultural Economics contributed by United States and Indian authors, found the amount of subject that
influenced the formation and development of agricultural economics. They concluded that the total citations of agricultural economics consisted of 70% from the subject groups of social science, and 30% from the subject groups of applied sciences and technology. Begaum and Sami have studied the scatter and seepage of literature in Psychology. They found that major research publications in Psychology were in the form of journal articles. Further, the author's preferences for publication in Indian journals were high. Moreover, the literature of psychology is interdisciplinary in nature, and nearly 483 journals out of 2,600 journals are producing at least one relevant paper. Sangam, in his theses explained the use of different forms of sources of information, distribution of subject, core journals, ageing of documents, ranking of journals and their availability at Karnataka University Library. He concludes that the results of the study have implication in the development of the need-based collection in libraries in the field of social sciences. Sangam has studied the communication pattern of Indian Historian through citation amylases. Sangam applied Bradford's Law to the psychology citation data. Sangam identified the information use patterns of researchers in the field of psychology on the basis of citations. Sangam, on the basis of citations in economics doctoral theses outlined obsolescence factors such as Annual Aging Factor, Half-life, Mean-life, Utility Factor, and Corrected Obsolescence Factor for journal literature and
books which is helpful in collection development and to evolve a weeding out policy in the field of economics. Aravind and Reddy\textsuperscript{228}, on the basis of citation analysis of 121 references cited in the 'Review of Anthropology' (1980-1982), found out that 57.78\% of the Archaeological Anthropology literature was published in the form of books. The authors further observed that citations with single author were more common than those with double authors. Moreover, the literature in the field was scattered in 82 periodicals. Of the 52.18\% of research literature published in 7 periodicals with 'American Antiquity' was the highest ranked periodical. Thaty and Mishra\textsuperscript{229} have studied most frequently cited periodicals by Indian agricultural economists during 1985-1988 by analyzing the citations appended to 170 articles published in five volumes of \textit{Indian Journal of Agricultural Economic}. The results of the study present a list of 20 periodicals each having been cited at least five times, and highlighted the types of publication cited and their quantitative data; authorship pattern; institution-wise contribution; country-wise distribution of most frequently cited periodicals. Ijary and Kannappanavar\textsuperscript{230} have made an attempt to know the information use pattern of Indian clinical psychologists. They observed that Indian clinical psychologists most profusely cited all the citations appended to 155 articles published in 3 volumes of periodical. The study also shows the list of 46 journals each having been cited at least 5 times. Sangam and
Karisiddappa\textsuperscript{231} have identified citation pattern in the different fields of social science. Purkayastha\textsuperscript{232}, in his paper ‘Information use pattern and analysis of literature in the field of Social Action’ based on 4 issues of Social Action published from New Delhi during 1989, described the affiliation and geographical distribution of authors, authorship pattern and average number of references, the main bibliographical forms cited, the ranked cited periodicals and obsolescence rate of cited literature. Bibliometric studies provide a method for examining research and communication among scholars in a particular field through their scholarly publication and offer investigators a chance to study the quality and quantity of work done by scientists in various fields. These studies are useful indicators of productivity, of trends, of emphasis of research in various disciplines and of researchers’ preferences for publication outputs. Bibliometric study in social science is not a age old concept. Goel and Garg\textsuperscript{233} conducted Bibliometric study based on social science research in India. The investigators report consisting of an analysis of 393 papers published by Indian social scientists covered in Social Science Citation Index. The results of the study reveal that most of the papers are published in Indian journals; some papers are directly related to problems faced by Indian society; most of the papers are published in low impact journals and have low citation rate. They conclude that anthropology, psychology and psychiatry are some of the areas where most
social science research is taking place in India. Sangam has studied the research communication pattern of political science research scholars, and also compared it with other social science research scholars' communication pattern. According to Buchanan and Herubel, in Indian university, political science research scholars use periodical literature for their research. They are of the opinion that collection development can benefit from a limited citation analysis of doctoral dissertation research. According to Verma, Indian econometricians give equal importance to both periodical and non-periodical literature for their research work and depend upon non-current research materials. The median age of citations range is from 12 to 15 years. Most of scholars in economics in India use more foreign periodical literature for their research work. Mathapathi, who studied the information use pattern of economics researchers in Karnataka University Dharwad, and highlighted the journal articles used and their distribution, obsolescence factors and chronological distribution of journal articles. He concluded that the results of the study implied in the development of need-based collection in the library in the field of economics. Sangam, in his paper ‘Information use Pattern of Researchers in the field of History: A Citation Study’ pointed out the major sources of information use, core journal, language, subject dispersion and the country of origin of cited documents. The author applied Bradford’s Law of Scattering. Mubeen studied bibliographic coupling in
economics by using 2s periodical in the field of economics viz 'American Economic Review' and 'The Economic Journal'. The researcher found out that coupling strength of 'American Economic Review' is higher and more consistent than that of 'The Economic Journal' and that of coupling rate of the citations in 'American Economic Review' was greater than that of 'The Economic Journal'. Biradar and Premalatha\textsuperscript{240} have conducted a Bibliometric study of psychiatric literature, on the basis of 14 M.D. dissertations submitted to NIMHANS, Bangalore during 1974-1975. They conclude that 73.22% of reading material in the form of periodical articles, English was the predominant language (97.61%) and 99.31% of literature published during the last 20 years constitutes almost 64% of the total literature. Usha Devi\textsuperscript{241}, in her research paper “Indian Journal of Agricultural Economics, 1983-1992: A Bibliometric Study”, described the importance and scholarly nature of ‘Indian Journal of Agricultural Economics’. The author identified collaborative authorship, leading authors, institutional affiliation, sex-wise distribution of papers, subject specialization of the contributors, geographical location of contributors, most cited journals, geographical origin of cited journals, subject dispersion of cited journals and age of cited journal. According to Sangam\textsuperscript{242}, in the field of psychology the tendency, the greater the growth of literature, the greater the obsolescence as well as the greater the half-life holds true. Since the beginning of 20\textsuperscript{th}
century, there has been a consistent trend towards collaboration between authors in all branches of science. The organizations of science have changed dramatically because scientists are no longer able to carry out their work in isolation. He says that collaboration is said to have taken place when two or more scientists work together on a specific problem or project. Sangam\textsuperscript{243}, on the basis of Psyclit CD-ROM database (1975-998), has studied collaborative research in Psychology in India. The author identified authorship pattern in psychology in India and highlighted the degree of collaboration in the different subfields of psychology. He pointed out, the collaboration linkages prevalent among various countries engaged in transnational collaborative research. He concludes that there is a high degree of collaboration in psychology research in India. Sangam\textsuperscript{244} has made an attempt to identify the indicators on six subjects, viz., sociology, economics, political science, psychology, history and anthropology. Sangam\textsuperscript{245} has also studied authorship pattern, degree of collaboration, coefficient and collaborative index in sociology and its 33 different sub-fields.
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