Chapter-3

Review of the related Literature
Literature reviews are a common feature of all dissertations, regardless of discipline or subject matter. They form as a basis for all other kinds of research or learned work. However, they are usually overlooked as a form of qualitative analysis. Yet the processes involved in building an argument from a body of literature are similar to processes involved in analyzing qualitative data. It requires the culmination of many skills including library research, logical arrangement of information and scientific writing. The role of a good literature review is to find and present the pertinent work from the primary literature in a logical and organized manner and to bring the reader as up-to-date as possible.

Efforts have been made to review the related literature by going through books, conference proceedings, journal articles etc. Because of the fact that no study similar to the topic could be discovered during the process, the literature indicating a worldview of growth of scientific journals has been taken into account.

(Price, 1961, p.92-97) observed that growth of the number of journals shows an exponential pattern. The study highlights that relationship between the number of scientists and the number of publications remained constant for 300 years and the rate of publication is higher in countries where government policies support scientific research. This fact stimulates speculation about the future growth of the literature in consideration of developing nations and their emerging role in the world. According to him the literature growth and the historical statistics of journals are same. A graphical presentation to explain the
growth pattern of journals has also been provided by the author. Price estimated that there were 10 scientific periodicals in 1750 and since then the number of such periodicals increased by a power of 10 every half-century, which has led to a doubling every 15 years. Taking a longer view, he calculated that this corresponded to a factor of 1,000 in a century and a half and of one million since the mid-seventeenth century.

(Broadman, 1961) indicates that the enormous increase in the medical periodicals necessitated the development of indexes, abstracts and other secondary tools. The author points out the number of journals across the globe as 4500, which furnish about 220,000 articles per year in about 20 languages published by 85 countries. English is the most common language sharing 37% of the total followed by German, French, Spanish and Italian. Six languages provide 85% of all the medical periodical literature.

(Bourne, 1962) reviews an estimate of the total number of journals and their mutual production, their national and linguistic origin, and the subject breakdown by country. He estimates the total number of scientific and technical journals across the globe as 100,000. Estimations made by S&T division of Library of Congress for National Science Foundation have been referred, according to which the number is between 30,000 and 35,000. Most of the literature is published in English followed by French and German. U.S. produces maximum literature followed by Germany and France. The author refers to the
fact that the increase in the number of journals per year increases the number of articles.

(Gottschalk & Desmond, 1963) have given a worldwide census of S&T serials. According to the study, the total population across the globe is 35,000, ± 10% than the 50,000 of World list. US occupies top position with a sum total of 6,200 followed by East and West Germany with 3050. The total number of serials produced by India is 650. According to the study percentage of serials devoted to Technology outdistanced the other broad fields. US produced highest of 56% in Technology, 23% in Agriculture and 13% in Medical Science followed by France and Russia. Of the total journals, 2/3rd came into existence between 1900 and 1930 and 1/3rd ceased during the passage of time. The author concludes that at-least in one field; in half a century there is a 33% death rate for journals.

(Banerjee, 1963) explains that progress in scientific research depends on maximum effectiveness of information channels. The study has provided Statewise, subjectwise and languagewise distribution of the number of S&T journals. The total number of journals in Engineering and Technology published by different Indian States is 91 among which West Bengal produced highest number of 30 followed by Maharashtra and Delhi each scoring 21. In Science the total was 44, West Bengal producing highest of 19, followed by Delhi and Uttar Pradesh each contributing 7. In Agriculture the total was 118, Delhi producing highest of 31 followed by Maharashtra and West Bengal contributing
15 and 12 respectively. In all the fields English was the dominating language with 85 journals in Engineering and Technology, 38 in Science and 60 in Agriculture. A separate table giving the number of Indian journals included in Chemical Abstracts, Mathematical Review, Science Abstracts, Section A and Engineering Index assists the study. He concludes by remarking that number of Indian S&T journals is insignificant when compared with the Western Countries.

(Mangla, 1964) has tried to describe the implications of the scientific research. The study also traces the history of the growth of scientific literature in various forms and the changes in the structure of science. He explains that the number of scientific journals and periodicals was 100 at the beginning of 19th century, which reached 1000 in 1850, more than 10,000 in 1900 & approached 100,000 in 1960. He points out the fact that the present growth rate will touch a million by the end of 20th century.

(Barr, 1967) has provided an estimate of scientific and technical periodicals between 30,000 to 100,000. He refers to an estimate made by National Lending Library (NLL), according to which by the end of 1965 the number was 26,000. He points out the misunderstanding of a graph of De Solla Price, which pointed 100,000 scientific periodicals in 1961. Barr points out that the graph did not include ceased publications.

(Sengupta, 1973) reveals the reasons for the growth of the number of periodicals in any branch of science. According to him, journals appear only when a particular branch gains recognition as a distinctive discipline. He
explains the growth of a subject occurs in three phases-i) increase in the size of established periodicals, ii) establishment of new periodicals for publication of research results from new geographical areas and iii) establishment of new journals to cover special areas of scientific discipline. The study reveals that after World War II a steady increase in the number of journals in Biochemistry has taken place. The author refers to the “World list of Scientific Periodicals” (4th ed.), which shows the following trend: 4 in 1900, 23 in 1920, 77 in 1940 and 201 in 1960.

( Osborn, 1973, p.20-21) reported that over 900,000 serial publications have appeared since the first printed newspaper was issued in 1609. The author refers that in 1957, Library of Congress estimated that 11 major lists had 434,000 serial titles under bibliographical control and 630,000 was the total number. New serial publications increase at an average of 13,125 a year, for 1950-70 an annual increase of 15,000 is the conservative estimate for world production. The author predicts about the last three decades of 20th century according to which an average increase of 20,000 titles will occur. A graph showing the cumulative number of serials since 1609 till 2000 has been provided.

( Sengupta, 1974a) examines the growth of Physiological journals with the help of “World list of Scientific Periodicals” (4th ed.) and its Supplement (1968). The study analyses that exponential increase in the research activity led to the increase in the number of journals in the field during 1796-1968. Where
the number between 1796-1880 ranged between 0-20, which rose to 40 till 1900, 80 till 1910, 140 by 1930, 220 by 1950 and it crossed 300 margin by 1968. A graphical presentation showing steep curve indicating an exponential growth has been provided.

(Sengupta, 1974b) has analyzed that before 19th century there were no Pharmacology journals. The author reveals to “World List of Scientific Periodicals” (4th ed.), which has shown a steady increase in the number of Pharmacological journals from the beginning of 20th century. In 1900 the number was 69, which rose to 138 in 1920, 242 in 1940, 404 in 1960 and 448 in 1968. A graphical presentation showing the growth has also been provided. It reveals the exponential growth of Pharmacological journals. The author analyses that roughly the number doubled every twenty years.

(Sengupta & Ramesh, 1978,) tried to compare the growth pattern of scientific journals in India and the world and also the present status of scientific journals published in India have been analyzed. The study suggests the measures to raise the standard to the international level. They try to convince that instead of allowing haphazard growth of journals, a national policy for balanced growth of standard publication should be formulated. The data used to support the findings had been collected mainly from Indian and foreign periodical directories, like Science Citation Index (SCI), Chemical Abstracts Service Source Index (CASSI), Current Contents, etc.

(Mahapatra & Musib, 1979) have provided the geographical analysis
with regard to the production of journals in India. The study covers the period between 1900-77, during which 5032 journals were recorded. The subject groups of Social Sciences and Applied Science and Technology cover about 58.66% of total journal publication in India. Among the States, New Delhi produced 24.42% of total. About 37.17% publishing towns in India produced journals in these subjects. Subject-wise analysis shows that 7.98% of towns produced 6.61% of publication in Pure-Sciences, 19.07% in Applied Sciences and Technology and 18.1% of towns produced 30.92% in Social Sciences. Only three States-West Bengal, Maharashtra and Kerala and the Union Territory of Delhi shared the maximum production in all the subject groups. Only 14 towns out of 302 were more active in journal production and their publication percentage ranged between 19.89% to almost zero percent, which indicated that percentage of publications from 288 towns was significantly negligible.

(Roy, 1982) in his paper has tried to find out the reasons for the spurt of journals. According to him the development of new subjects led to the starting of new journals. Moreover increase in government-sponsored research and in the number of researchers had led to the increase in the number of journals. The author also points out the sociological factors like rush for quick recognition by showing a quantitative output as another factor and the “Publish or Perish” syndrome of academics responsible for paper explosion. He refers to the “World List of Scientific Periodicals” giving the number of periodicals as 24,000 and 60,000 during 1900-21 and 1900-60 respectively. In the concluding section the
author suggests to change the format of traditional printed form of journals to electronic one, which will enhance retrospective search and solve the problem of space.

(Grogan, 1982, p.132) explains that an exponential growth of science has occurred, paralleled by a similar increase in the number of scientific periodicals. The author indicates that by 1800 there were about 100 titles, by 1850 the number reached 1000 and by 1900 it crossed 5000. The author indicates that in S&T the number of periodicals is about 30,000, of which United States accounts for 1/5th and UK for 1/8th. At the same time the author indicates that if defunct periodicals were also counted the number would exceed 75,000.

(R.P. Kumar, 1984) discussed the factors that led to the development of periodicals in India, investigated the causes for presenting thoughts in periodicals, find change in periodicals during the course of their development and study their characteristics. Tabular analysis to show the growth of periodicals has been provided. The study shows a gradual decrease during 1941-47 due to the World War II. The total number of periodicals published from Calcutta, Bombay and Madras was 120, 63 and 51 respectively. As far as frequency is concerned, 11 periodicals were weeklies, 146 and 124 were monthlies and quarterlies respectively while the rest belonged to other periodicals. Calcutta produced 6 weeklies, 44 monthlies and 40 quarterlies, while Bombay contributed 25 monthlies, 23 quarterlies and rest others. Madras produced 28 monthlies and 12 quarterlies.
(Musib, 1984) analyzed that the number of publications in Agriculture, Agricultural Economics and Economics are concentrated within few countries. The study revealed that USA ranks first in all the three fields publishing almost 30% of the total production. Almost 10 countries including USA, UK, Canada, France, Italy, West Germany, India, Netherlands and Japan published 70% of world journals in Agriculture while other 65 countries published 30% of the rest. The first five countries contributed 50% of the total. In Agricultural Economics these ten countries contributed 73% of the total whereas in Economics these produced 66% of total. In Agricultural Economics India’s position was 4th contributing 6% of total, while in Economics it stood 3rd, publishing 5% of the total. Maximum journals were published under monthly periodicity followed by quarterly. In Agriculture, Associations published maximum number of journals, in Agricultural Economics, government topped the list while as in Economics and business firms published maximum number of journals.

(Tomajko & Drake, 1986, p.289-297) have tried to find the effect of new technologies on the communication pattern between scientists and technologists. The origin of scientific journals, problems of contemporary journals, exploration of developing technologies like electronic bibliographic data retrieval, personalized information systems, electronic mail etc with emphasis on their effect upon scholarly communication in the future have been discussed. Two factors responsible for the emergence of scientific journal are the newspapers and the emergence of Scientific Societies.
(Musib, 1987) has analyzed the growth of Indian journals between 1900 to 1979. The study has recorded the year of first publication, frequency and agency of publication of each journal. Only the growth of English language periodicals has been analyzed. According to the study maximum number of journals had been published in Social Sciences (29.54%), followed by Applied Science and Technology (27.67%). Pure sciences comparatively contributed few journals (6.29%). Decade-wise growth has also been shown starting from 1900 till 1979. The total number of Indian journals according to the study in all the subjects is 6502. The subjects have been determined according to the 10 main divisions of DDC, 19th edition. Majority of the journals are published either monthly or quarterly. Universities followed by Associations and Commercial firms published most of the journals.

(Narendra Kumar & Kochhar, 1986) highlight the recommendations of the “Seminar on Primary Communications in S&T in India” to assess the impact of Indian scientific periodicals on World scientific literature. The study traces the growth of Indian scientific periodicals in relation to the World Scientific Periodicals. The study refers to “World List of Scientific Periodicals” which listed 25,000 periodicals during 1900-20, 36,000 during the period of 1900-34, 50,000 in 1900-53, 60,000 in 1900-65 and 75,000 during 1900-75, thus showing an annual increase of 3-4%. The World War II affected the growth rate of periodicals during 1940’s. India produced 46 periodicals during 1900-20, which rose to 109 during 1900-40, 474 during 1900-60, 797 in 1900-68 and
1292 in 1900-76. The post-independent period experienced rapid increase of scientific periodicals and by 1983 the estimated number went up to 2000.

(Kosher & Narendra Kumar, 1988, p. Bbl 55-67) have tried to highlight the status and impact of contributions of Indian Scientists and Technologists. The study refers to “Directory of Indian Scientific Periodicals”, according to which during the first eight years after Independence the growth of Indian periodicals was steady but limited. The study has estimated the number of Indian scientific periodicals as 2000 compared to world output of 55,000 scientific periodicals in 1984. The authors have pointed a steeper growth in 1955 and at the same time pointed towards spurt of 65 new periodicals in 1964. Suggestions like qualitative improvement in the nature of scientific research and periodical literature have been provided.

(Sengupta, Lalita Kumar & Mukhopadhyay, 1989) have tried to explain the exponential growth in the scientific research influencing directly upon the increasing number of periodicals during the post-war period. The study evaluates the growth and status of Indian Bioscience periodicals. Taking examples from USA and India, a comparative study of the number of scientific periodicals between the developed and developing countries has been presented. As reported, the number of periodicals published in USA in 1770 was 10 only. It rose to 300 in 1870 and reached to 40,000 in 1989, whereas in India the number of periodicals was 49 in 1910. It rose to 102 in 1920 and to 203 in 1930 and 311 by 1940. The number of scientific periodicals reached to 388 just before
independent India. By 1989 the number of periodicals crossed 15,000.

(Sarkar, 1989) in his study has tried to find out reasons for the surge of periodicals. The author has tried to find out the earliest scientific periodicals and also highlights the early 20th century periodicals. Growth of science periodicals during the post-independent period has been analyzed. The study includes the periodicals published in Bengali language as well as the bilingual ones. At the same time some suggestions for regular publication of periodicals like necessary manpower, strong organization and regular financial assistance from State/Central government have been laid down.

(Dhaka, Usha & Nishy, 1993) revealed in their study that the number of periodicals in S&T is continuously increasing every year. The authors have tried to drive the attention towards the decrease in the acquisition by the Indian libraries due to stagnant budgets and increasing prices of these periodicals. The study reveals the number of S&T periodicals has risen from 40,000 to 55,000 in just one and a half-decade across the globe. In 1980, India procured 35,000 S&T periodicals while in 1985 the number went down to 18,000, by 1993 it was just 12,000. The study shows concern over the erosion of the country’s S&T primary information resource. It also suggests means to stem such a rot, like application of information technology involving optical imaging based on small disc to store large data etc.

(Arabagonda & Bankpur, 1998) have tried to analyze the nature, scope and growth of periodicals in the field of drugs and pharmaceutical science. The
distribution has been determined chronologically, geographically, language wise and periodicity wise. According to the study till 1850 only 4 periodical were published which by 1950 rose to 84%. USA produces highest number of journals scoring 39.11% of the total, followed by UK publishing 8.08%, Germany with 7.17%. Japan producing 4.43%, France contributing 4.3% etc. India occupies 10th position producing 2.86%. English is the predominant language in which 86.70% of journals are published while bi-lingual and multi-lingual together produce 7.45% of global output. The study reveals that 30.12% of periodicals are published monthly, 20.08% are quarterly publications followed by 13.55% bi-monthly.

(Shah, 1998) has tried to give the meaning of serials and their growth. It also stresses the need for speedy periodical communication in Science and Technology for the development of the nation. It discusses the role of scientific serials covering scientific information. The study depicts the popularity of serials amongst the scientific community. He refers to an estimate made by National Electronic Research Council, London, according to which in the beginning of 19th century there were 100 scientific serials, by 1850 it rose to 1000, by 1900 it was 10,000, the number in 1998 was 100,000 published in 60 languages only in S&T. The study points out the fact of annual increase of more than 8.9% doubling every 10-15 years. The study suggests that serials prove to be of immense importance for scientific investigation.
(Sen, 2000) traces the historical development in India which led to the launching of ‘Asiatick Researches’ in 1788 by the society instituted in Bengal for inquiring into the History and Antiquities, the Arts, Sciences and Literature of Asia. The author has tried to find out the conditions conducive for the emergence of scientific periodicals. Printing proved to be a prime factor for the proliferation of periodical publication. The paper also explains the role played by British and East India Company in the development of periodicals.

(Ramaiah, 2003, p.112-128.) describes the growth of periodicals since last three centuries. He gives reference to George Andrela’s report – “Information in 1985: A Forecasting Study of Information needs and resources” published in 1973. According to the report by the middle of 18th century there were about ten scientific periodicals, the number rose to 100 by the turn of 18th century. During 1850 the number had grown to 1000, by the beginning of 19th century the number of scientific periodicals became 10,000. During 1973 the number across the globe was round about 30,000. The author refers to the UNESCO report that mentioned the number of scientific periodicals as 71,000 in 1971. The author forecasts the number of scientific periodicals would go up to 400,000 by the beginning of third millennium thus indicating exponential growth of periodicals.
References


