5. Conclusion and Suggestions

5.1 Introduction
The main objective of any research is either to extend the frontiers of knowledge or to bridge the gap in the existing knowledge. It may even mean giving new meaning to the accepted facts or discarding old accepted concepts in the light of newly acquired knowledge. In any case, each research has its own objectives which lead to certain result. During present study, Researcher analysed bibliometrically 108 Ph. D. theses in Library & Information Science on Shodhganga Repository. Growth of doctoral research in Library and Information Science in India is also studied.

5.2 Findings / Conclusion
After analysis of Bibliometric study of electronic theses in Library and Information Science on Shodhganga Repository researcher has given following findings and conclusion

5.2.1 Growth of Library and Information Science Research in India
Decade wise distribution
Decade wise distribution of Ph. D. theses reveal that during the first two decade of 1950-59 and 1960-69 only two Ph. D. degrees were awarded in each decade. This growth was multiplied 8 times during 1970-79 i.e. 16 Ph. D. degrees were awarded in these span of years. The growth in these three decade was called as slow growth. Steady and continuous growth was observed during 1980-89 with 103 (5.27 %) contribution of theses in LIS. Growth in next decade crossed records with awarding of 395 (20.21 %) Ph.D. degrees, hence called growth as rapid growth. During 2000-2009 decade, highest contribution of Ph. D. degrees observed with 811 (68.01 %) hence called as spectacular growth. Same spectacular growth was also recognized during six year span i.e. 2010-2016 with contribution of 625 (31.99 %) Ph.D. (Singh & Babbar, 2014, p. 171). (table 3.1)

Thus at present quantitatively growth of doctoral research is progressive.
State wise contribution of Universities in India

During total period of 67 years (1950 to 2016) of LIS research covered under this study, 1954 Ph.D. degrees were awarded by 92 universities. These 92 universities covered by 23 states in India. Among these highest contribution given by Maharashtra State with 12 (13.04%) universities followed by Uttar Pradesh (11), Tamil Nadu (9), Gujarat and Karnataka (7), Madhya Pradesh (5) and other 17 states with below 4 universities. Lowest contribution was one university represented by Manipur, Mizoram, Telangana and Uttarakhand states.

It is inferred that 23 states in India contributing research in LIS but remaining states should be involved in next year's. (table 3.2)

University wise Distribution of Doctoral Theses in India

There are 92 Universities/Institutes offering research programme in LIS. During 1950-2016, these Universities/Institutes awarded 1954 doctoral theses in the discipline of LIS, giving an average of 21.23 theses per university. The number of Ph.D. degrees awarded ranged from a high of 97 by Jiwaji University to a low of only one degree in at least 9 universities. There is a wide inter university variation in the number of LIS doctoral theses awarded.

In each 39 universities, those universities awarded more than 40 Ph.D. degrees may be termed as most productive universities. Within these group of most productive universities, Jiwaji University has awarded (97) Ph. D. theses, followed by Karnataka University (94), Annamalai (88), R.T.M.U., Nagpur (77), Savitribai Phule Pune University (67), University of Madras (63), Andhra University (62), University of Delhi (58), University of Mysore (56), Panjab University (54), University of Rajasthan (52), Sri Venkateswara University (44), Jadavpur (43) and B.A.M.U, Aurangabad (42).

On the other side, there are 28 universities awarding less than five Ph.D. degrees each during the study period. Also during study span 10 to 20 degrees were awarded by 13 universities, 21 to 30 degrees awarded by 14 universities and 31 to 40 degrees awarded by 12 universities. Thus it is inferred that research trend in LIS is growing spontaneously and thus forming research group in various universities in India.
Analysis of Ph.D. Theses in LIS on Shodhganga

5.2.2 Type of University wise distribution of theses

Maximum contribution obtained by 22 (78.57%) State Universities by 80 (74.07%) theses followed by 4 (14.29%) Central Universities by 24 (22.22%) theses also One Deemed Universities by 3 (2.78%) theses and One Private Universities by 1 thesis.

It means that largest number of Contribution of theses 80 (74.07%) is found by State University and least contribution i.e. 1 (0.93%) thesis by Private University. Thus 28 Universities grouped into four types as state, central, private and deemed university.

Researchers in LIS mostly rely on State Universities for doing doctoral research.

5.2.3 State wise Distribution of No. of University and No. of Theses

On Shodhganga repository 28 Universities and 108 theses contributed by 14 States. Maximum No. of University contribution is 4 (14.29%) and occupied by two states namely Maharashtra and Karnataka. Uttar Pradesh has got second rank by contributing 3 (10.71%) University. Six States among 14 States contributed by each two (7.14%) Universities. Five states are contributed by each one (3.57%) University.

No. of theses wise distribution of States indicate that Uttar Pradesh has got first rank among 14 States with uploading of 26 (24.07%) theses contributed by three Universities followed by Maharashtra State with 21 theses contributed by four Universities, Chhattisgarh with 17 theses contributed by two Universities respectively. Madhya Pradesh and Telangana State contributed by least no. of theses i.e. One each.
5.2.4 University wise and State wise Distribution of theses

Total number of theses deposited on Shodhganga before 2014 were 108 but after 2014 and up to December 2016 these were 330.

It is inferred that deposition of theses on Shodhganga in LIS shows steady increase in growth which is a mark of progression of research in LIS.

**Hypotheses 1**: Considering increase in number of growth of theses in LIS on Shodhganga hypotheses "The relative growth rate of research in LIS shows a progressive increase in trend of research" made in present study is valid.

5.2.5 Subject wise distribution of theses

There are 38 subjects covered in 108 theses. Highest number of theses 10 (9.26%) was submitted in the subject of Information Seeking Behavior followed by 9 (8.33%) in Information Communication Technology, 7 (6.48%) in Library Management and 7 (6.48%) in Academic Libraries respectively. Least number of theses i.e. One was submitted in the subject of Librarianship, Intellectual Property Right, Web Technology, Reading Habits, Bibliographical Database, Outsourcing of Services, Total Quality Management, Library Education, Library Classification, Library Movement, Information Index, Library Consortia, Disaster Management, Solo Librarian, Cost Effectiveness, Resource Sharing & Networking, Semantic Web and Patent Literature. It is cleared that most of the research are on current topic like Information Seeking Behavior, Information Communication Technology, Library Management, Library Automation & Networking, Digital Library, Information Literacy, Academic Libraries, Public Libraries, Bibliometrics and Scientometric etc.

Researchers in LIS now require to concentrate on new topic of research and actual problem faced by LIS professionals and library user because most of the topics were repeated.

5.2.6 Research Guide wise distribution of theses

Guide wise distribution of theses indicate that Dr. M. T. M. Khan has given highest contribution as a research guide by guiding 9 (8.33%) research scholar followed by
Dr. U. N. Singh guided 6 (5.56%) research scholar. J. L. Saini and Brijesh Tiwari guided 5 (4.63%) research scholar respectively. Thus 58 guide among 28 University guided 108 research scholar. One guide, guided to one research student such contribution found 35 times.


Thus it is concluded that during analysis of LIS theses on Shodhganga Dr. M. T. M. Khan has given highest contribution as a research guide but in terms of actual research of LIS in India C. R. Karisiddappa ranked first by guiding 36 Ph. D., thus result is mismatching due to less no. of theses deposition on Shodhganga as compare to actual deposition of theses in different universities in India.

Main Guide and Joint Guide

There are 09 main guides worked with another guides as a joint guide and both guided research scholar. Among the joint guide Dr. M. T. M. Khan ranked first by guiding Nine research scholar. Pandey S. K. Sharma gave three times guidance with M. T. Khan to three different research scholar.

5.2.7 Year wise Distribution of theses

Highest no. of theses i.e. 17 (15.74%) were awarded in year 2012 thereby 14 (12.96%) theses were awarded in year 2010. All 108 theses were ranked in nine ranks. Third rank obtained in year 2010 by contribution of 10 theses, Fourth in year 2005 by contribution of 9 theses, fifth in year 2008 by contribution of 7 theses, rank six in year 2002 by contribution of 6 theses, rank eight in year 1998 by contribution of 4 theses and last rank nine score in 1995, 1999, 2000 by deposition of One (0.93%) theses.

Most of the theses awarded degree in year 2009, 2010 and 2012 may be due to exemption given to Ph.D. holder in the recruitment of Librarian and Assistant Professor by University Grants Commission, Delhi.

5.2.8 Date wise theses uploaded on Shodhganga
Shodhganga started uploading of theses in Library and Information Science from 22 November 2010. Many theses on it were awarded Ph.D. from year 1995 but actual uploading started from year 2010 hence it was found that there is no any co-relation between theses awarded year and uploaded year on Shodhganga.

From 2009 UGC has made mandatory to University for uploading of theses on Shodhganga but still many University not started uploading of there theses which will made duplication of topic of research due to unavailability of information on current research.

**Hypotheses No. 6** : It is concluded that there is no any co-relation between theses submitted year and uploaded year on Shodhganga repository. It means that although UGC has made mandatory to upload Ph.D. theses on Shodhganga but many universities are not uploaded there theses timely hence hypotheses made before present study regarding "Universities uploaded LIS theses on Shodhganga timely and regularly " is invalid.

**5.2.9 Page wise distribution of theses**

Maximum number of theses 26 (24.07%) observed range of pages in 241-280 followed by 25 theses (23.15%) in the range of 201-240 pages and 14 (12.96%) theses in the range of 321-360 pages.

It is inferred that One theses has largest number of pages in the range of 481-520 and lowest number of pages in the range of 81-120. Average number of pages calculated from total number of theses is 261.

**5.2.10 Language wise distribution of theses**

English is the most prominent language found in Library and Information Science research which occupies 95 (87.96%) theses among 108 theses. Second ranking occupied by Marathi language by contributing 9 (8.33%) theses. Hindi and Gujarathi language contribution are two theses each.
5.2.11 Title Keyword of High Frequency

Keywords in the title of research represent whole content of study hence it is most important. Total 1054 words found in the title of theses by excluding all the non substantive words like adverb (as), articles (a, an, the), conjunctions (and, or, but), prepositions (by, for, in, of, on, to, under, with) and pronoun (its, some).

Word ‘Information’ has got highest rank and observed 48 (4.55%) times followed by word ‘study’ with 47 (4.46%) times and word ‘libraries’ with 46 (4.36%) times respectively.

5.2.12 Rank Frequency of Occurrence of Keywords

Keywords maximum frequency is 48 among 337 keywords and value of log r ranges from 0 to 2.70, log f ranges from 1.68 to 0 respectively. Product rf i.e c value ranges from 48 to 497 and log c ranges from 1.68 to 2.70.

5.2.13 Zipf's Law

Relationship between the frequency of words and its rank given by Zipf. Zipf's law states that if words are arranged in their decreasing order of frequency then the rank of any word of the text will inversely proportional to the frequency of occurrence of the words. It is used as a predictive measure for the frequency of occurrence of particular words within text.

The product of rank (r) of a keyword and frequency (f) of occurrence of keyword ranged between 48 to 497 which is not constant in all frequency of words hence Zipf's law is not valid for present study.

5.2.14 Theses wise distribution of Citations

Total number of citations of 108 theses are 16982. Highest number of citation found is 587 (3.46%) followed by second rank 328 (1.93%) citations and third rank 314 (1.85%) citations. Lowest number of citations is 39. Citations below 100 are found in 23 theses, in the range of 100 to 200 found in 60 theses, in the range of 200 to 300 found in 21 theses. Average of per theses citation is 157.24.
It is concluded that researcher are citing references to update their knowledge but there is no uniformity in the standards of citations.

5.2.15 Distribution of P Citation v/s E-Citation


P citations 15088 (88.85 %) is the most cited source of information for researcher. E - citations 1894 (11.15 %) contribution is lower than that of P citations. The use of e- resources is increasing slowly among researcher due to easy availability and economical feature. But during this study its contribution is lowest because there is a mismatch between theses awarded and uploaded on Shodhganga website by different University.

During present study Print resources are dominating E resources due to comfortable reading and no need of any device while reading.

Hypotheses No. 5: - Majority of citations are from print resources (88.85 %) while E-citations contribution is 11.15 % hence use of print resources are higher than that of e-resources. Due to this findings hypotheses made in present study i.e. "Use of E-resources are higher than that of print resources " is invalid.

5.2.16 Bibliographic Form of Cited Documents

Researcher uses different scholarly information resources to rectify results hence they refer many resources and cited in their research as a references. These references are given in bibliographic form of documents as Book, Journal, Website, Conference Proceeding, Theses / Dissertations, Grey literature, Encyclopedia, Annual Report, News Papers, Dictionaries, Manual, Review and documents which could not be identified due to non availability of complete information termed as Unidentified or
Others. Website citations contain various types of web resources such as website, online databases, e-book, and e-journal.

Analysis of citations according to document type reveal that Journal articles received 8024 (47.25%) citations and ranked first, book 3655 (21.52%) citations with rank second, Website 1894 (11.15%) citations with rank third, and Conference Proceeding 1123 (6.61%) citations with rank fourth. Grey literature includes documents in seminars, lectures, key note addresses, brochure, smarnika, letters, leaflets, manifestoes, pamphlets, and refresher course materials which occupies 236 (1.39%) citations during the study. Remaining bibliographic form contains Theses/Dissertation with 383 (2.26%) citations, Encyclopedia 215 (1.27%) citations, Annual Report 186 (1.10%) citations, Newspaper 274 (1.61%) citations, Dictionary 175 (1.03%) citations, Review 295 (1.74%) citations, Manual 117 (0.69%) and Unidentified/Others with 405 (2.38%) citations.

**Hypothesis:** 2 The journals are more cited in comparison with other source of publications. The data in Table 4.15 and Figure 4.6 reveal that type of bibliographic form i.e. journal is more cited than the other sources of information. Hence the hypothesis "Journals are more cited in comparison with other source of publication" is valid and accepted.

### 5.2.17 LIS V/s Non LIS Journals

It is revealed that researchers used more number of Journals as 432 (56.03%) from LIS (Library and Information Science) subject and 339 (43.97%) from Non LIS i.e. interdisciplinary subject or subject excluding Library and Information Science. It is concluded that researcher not only refer Library and Information Science subject literature but also other subject literature.

Thus it is reflected that in multidisciplinary concept, librarian and LIS Professionals are publishing their views even in Non LIS journals.

### 5.2.18 Language wise Distribution of Citations

It was observed that four languages occupied 16982 citations. Researchers used English, Hindi, Marathi, and Gujrathi language literature for their study.
English is the most prominent language and Information source used by researchers. Citations in English language ranked first with 16360 (96.34%) citations followed by Hindi language with 421 (2.48%) citations, Marathi with 145 (0.85%) citations and Gujrathi with 56 (0.33%) citations respectively.

It is found that local language has less contribution but some literature published in Hindi, Marathi and Gujrathi are very popular at local level and used in the study by researchers.

5.2.19 Chronological distribution of book citations

Majority of books (30.01%) cited are published during year 1991-2000 followed by 25.25% during year 2001-2010. Least no. of cited books i.e. 10 (0.27%) are published during year 1901-1910.

Thus it is concluded that Researcher in LIS are using current literature in the subject.

5.2.20 Frequency of book citations and their obsolescence

Analysis of citations by age of the cited documents can indicate useful life of documents. This useful period is called as half life period of literature of particular subject. Half life of literature is the time by which one half of the currently published literature become obsolescent (Narayana, 1991). It is also found that half life in citation is same as the half life for literature growth.

It is observed that most of the books i.e. 654 (17.89%) are published during span of 10-14 years followed by 612 (16.74%) during 15-19 years of time span. Least no. of records found is 2 (0.05%) and these found during time span of 85-89, 90-94 and 95-99 years.

5.2.21 Obsolescence of Book Citations

Only 1.92 percent (70) of books cited up to four years old and 10.45 percent (452) of citations are up to nine years. It is observed that Half life period (median citation age) for books in Library and Information Science is 20 years.
It is concluded that there is a fast growth of literature in LIS.

5.2.22 Chronological distribution of Journal citations

Majority of articles (3347 (41.71%)) cited are published during year 2001-2010 followed by 2786 (34.72%) during year 1991-2000. Least no. of cited journal i.e. 1 found published before 1900.

5.2.23 Frequency of Journal citations and their obsolescence

It is observed that most of the articles i.e. 2854 (35.57%) were published during span of 5-9 years followed by 1680 (20.94%) during 10-14 years of time span. Least no. of records found was 2 (0.02%) and found during time span of 90-94, 95-99 and 100 + years.

5.2.24 Obsolescence of Journal Citations

Obsolescence studies are one of the main areas of citations, bibliometrics, scientometrics and infometrics. The studies of the obsolescence of literature facilitate the active library professionals and knowledge scientists to decide that, which document is to be kept and which is to be discarded, so as to keep up the need-based assortment within the libraries. Cited half life is a measure of the rate of decline of the citation curve. It is the number of years that the number of citation take to decline to 50% of the initial value.

It is observed that Half life period (median citation age) for journals in Library and Information Science is 13 years. It means that LIS literature in Journal is moving fast.

5.2.25 Geographical Distribution of Journal

A total number of 8024 Journal citations in 108 Ph.D. theses are taken from different 771 Journals in Library and Information Science and other interdisciplinary subjects. United States scored the top position with 210 (27.24%) journals, second rank goes to United kingdom with 165 (21.40%) journals, followed by India with 66 (8.56%) journals. Least contribution of journal is three and given by eight countries.

It is concluded that as compare to USA, Indian contribution in Journal should be increased.
5.2.26 Ranking of Publisher

It is observed that 3655 citations of books are published by 309 publishers. Study revealed that Ess Ess Publications ranked first with 145 (3.97%) citations, Concept Publishing Company ranked second with 135 (3.69%) citations, Sage Publication ranked third with 85 (2.33%) citations, and Tata McGraw Hill with 84 (2.30%) citations. Lowest contribution of publisher i.e. one given by 80 publishers. From analysis it is inferred that 309 publishers contribution is better in LIS field.

It is concluded that Indian Publisher ESS ESS Publication, Delhi ranked first among publishers but total contribution of Indian Publisher was found less.

5.2.27 Ranking of Websites

Electronic form of document contains e books, e journal, databases and information on websites in various file formats. E-resources are easily accessible and not time bounded means researcher can refer it from anywhere and at any time.

Total number of 1894 e resources in URL/Website form are analysed and given in table 4.24. It is inferred that highest rank secured by www.emeraldinsight.com followed by second rank http://www.en.wikipedia.org with 41 (2.16%) citations, third http://www.shodhganga.inflibnet.ac.in with 36 (1.90%) citations and fourth with http://www.niscair.res.in with 35 (1.85%) citations. Least contribution of website is one and it is given by 95 websites.

Now a days almost researchers are using majority of e-resources for reference but during present study, theses during time span of 1995-2013 were studies hence e-resource contribution is less.

5.2.28 Authorship Pattern

Ranking of Authors are done to know the most productive contributors in the subject. Authorship pattern was categorized into eight different groups as Single Author, Two Author, Three Author, More than three Author, Editor, Corporate, URL(Website) and Author Not Mentioned. A total number of 16982 cited documents found among 108 Ph.D. theses. Single Author contribution is highest i.e. 8298 (48.86%) citations hence got first rank followed by two author with 3447 (20.30%) citations, URL or Website as author with 1894 (11.15%) citations, three author with 1138 (6.70%) citations.
citations, more than three author with 868 (5.11%) citations, editor as author with 412 (2.43%) citations and Corporate as author with 435 (2.56%) citations. In some references of theses author not mentioned, its contribution is 490 (2.89%) citations. Some corporate such as organization, association and company publishes article as a author.

**Hypotheses No. 4** - Single author articles (48.86%) are more than that of multi author so collaborative research is not predominant than single author hence hypotheses "There has been an increasing trend in collaborative research " is invalid.

**5.2.29 Degree of collaboration**

Analysis of authorship pattern depicts that contribution of single author is 8298 (48.86%) while multi author is 5453 citations.

The Degree of collaboration among authors is the ratio of the number of papers published in a discipline during certain period of time. It is found that the degree of author collaboration is 0.39. Therefore, the Solo research is quite remarkably observed in Library and Information Science.

**5.2.30 Ranking of Single Author**

The author who is most preferred by researchers, that documents are most important to keep in the library. The purpose of author ranking is essential to librarians as well as researchers. Among 16982 citations single author references are 8298 (48.86%). Garfield Eugene is the most prolific author secure 49 (0.59%) citations, Wilson T.D. ranked second with 46 (0.55%) citations, Ranganathan S.R. ranked third with 40 (0.48%) citations. Single author contribution among total 8298 citations is 3066.

**5.2.31 Ranking of Co-Author**

Analysis of Co-author as First and Second authors found 986 author with 3447 citations as a joint author.

**5.2.32 Ranking of Books**

Books are most reliable medium of communication. Researchers in LIS used books as the reference source of study. Out of total 16982 citations 3655 citations are from
book. Ranking of books are arranged on the basis of number of times it was referred. Highest cited book was Five Laws of Library science with 24 (0.66 %) citations followed by Prolegomena to Library Classification with 23 (0.63 %) citations, Little Science Big Science with 22 (0.60 %) citations and Research Methods and Techniques in Library and Information Science with 22 (0.60 %) citations. Analysis of book citations reveal that 636 books contributed 3655 citations.

5.2.33 Ranking of Journal

Journals are primary information source to the researcher. The ranked list of highly cited journal is one of the tool for a Librarian to select the journal of highest utility. Analyses of 8024 Journal citations of 771 journal has been prepared on the basis of total citation frequency of each journal. Annals of Library and Information Studies ranked first with 268 (3.34 %) citations, SRELS Journal of Information Management ranked second with 214 (2.67 %) citations, Journal of Documentation ranked third with 196 (2.44 %) citations followed by Scientometrics with 190 (2.37 %) citations. One third of the citations contributed by 15 journals these journals are called as core journals in Library and Information Science. Core journal in LIS are Annals of Library and Information Studies, SRELS Journal of Information Management, Journal of Documentation, Scientometrics, IASLIC Bulletin, ILA Bulletin, Library Trends, Library Management, Library Review, DESIDOC Journal of Library and Information Technology, Herald of Library Science, College & Research Libraries, The Journal of Academic Librarianship, Journal of the American Society for Information Science and Technology and The Electronic Library. Only 33 journal occupied 50.35 % citations in the present study.

Among 15 core journal, 5 Indian journals contributed so its contribution is very nice but total number of Indian journal among 771 journal are very less as compared to US and UK journals.

5.2.34 Testing of Bradford's Law

For testing Bradford's law, 771 journals are divided into three zones. It is observed from the Table 4.31 that there are 15 journals in the nucleus and they are the most productive journals devoted to Library and Information Science sharing 2677 of total
citations. The next zone is represented by 58 journals which shares 2687 of total citations, and the third zone is represented by 698 journals which shares 2660 of total citations. Each zone has approximately one third of the total citations. Hence the journal distribution as per the Broadford’s law of scattering reveals the ratio 15:58:698.

The distribution of journals with corresponding citations in each zones are shown in table 4.31. According to bradford’s law, distribution of three zones must satisfy formula as 1:n:n^2. This does not fit into Bradford's distribution.

For verification of Bradford's law of Scattering Leimkuhler model is used. It is found that the percentage error is negligible. It is observed that, the number of journals contributing references to each zone increases by multiplier of 7.81. The data of the zonal analysis shows that the first zone containing 11 journals contributed 2124 citations, 86 journals of second zone produced 3712 and the 674 journals of third zone produced 2188 citations. Here the mean value of the Bradford Multiplier (BM) is large i.e. two digits. The larger the Bradford Multiplier, presumably, the higher is the scatter. Although the value of Bradford Multiplier also depends on the size of the data, smaller the data, smaller the value of Bradford Multiplier. Since the percentage of error is very negligible, the Bradford’s law fits very well in this data set. The study identifies 11 journals as the nucleus journals that were most cited by the researcher of Library and Information Science, out of the total of 771 journals, 26.47 percent of the total citations of researchers of Library and Information Science, 86 journals i.e. 27.26 percent and the remaining 674 journals i.e. 25 percent of total citations appended in journals. The three zones are not exactly the one third of the total citations as proved by Bradford. There is no exact match in the proportion of number of journals and the number of papers of each group.

**Hypotheses No. 3**: Bradford's law does not fit verbally but according to Leimkuhler model percentage error is very negligible i.e. 0.045 hence it is concluded that Bradford’s law fits very well in this data set. Hence hypotheses made in present study as "Rank list of Journal obey’s Bradford's law" is valid.
5.3 Tenability of Hypotheses

**Hypotheses 1:** Total number of theses deposited on Shodhganga before 2014 were 108 but after 2014 and up to December 2016 these were 330. It is inferred from table that deposition of theses on Shodhganga in LIS shows steady increase in growth which is a mark of progression of research in LIS.

Considering increased in number of growth of theses in LIS on Shodhganga hypotheses "The relative growth rate of research in LIS shows a progressive increase in trend of research" made in present study is valid.

**Hypothesis: 2** The journals are more cited in comparison with other source of publications. The data in Table 4.15 and Figure 4.6 reveal that type of bibliographic form i.e. journal is more cited than the other sources of information. Hence the hypothesis "Journals are more cited in comparison with other source of publication" is valid and accepted.

**Hypotheses No. 3:** Bradford's law does not fit verbally but according to Leimkuhler model percentage error is very negligible i.e. 0.045 hence it is concluded that Bradford’s law fits very well in this data set. Hence hypotheses made in present study as "Rank list of Journal obey’s Bradford's law" is valid.

**Hypotheses No. 4** - Single author articles (48.86%) are more than that of multi author so collaborative research is not predominant than single author hence hypotheses "There has been an increasing trend in collaborative research" is invalid.

**Hypotheses No. 5:** Majority of citations are from print resources (88.85%) while E-citations contribution is 11.15% hence use of print resources are higher than that of e-resources. Due to this findings hypotheses made in present study i.e. "Use of E-resources are higher than that of print resources" is invalid.

**Hypotheses No. 6:** It is concluded that there is no any co-relation between theses submitted year and uploaded year on Shodhganga repository. It means that although UGC has made mandatory to upload Ph.D. theses on Shodhganga but many universities are not uploaded there theses timely hence hypotheses made before
present study regarding "Universities uploaded LIS theses on Shodhganga timely and regularly" is invalid.

5.4 Suggestions

Following suggestions are given to Library and Information Science Professionals, Librarian, University, editors and authors of the books and journal articles.

5.4.1 For Librarian and LIS Professionals

Ranking of Journals and Books in LIS during present study helps librarian and Library Professionals for selecting Journals and books in LIS. Collection building of LIS literature must be considered by referring half life of Books and Journal.

5.4.2 For Researcher in LIS

Researchers in LIS should use proper standard citation format to cite bibliographic references. Bibliography should not incomplete and references in it must indicate any bibliographic form of documents.

5.4.3 For University

University must upload information regarding Ph. D. degree awarded in terms of Name of Researcher, Name of Guide, Title of theses, Department and Year of submission. It also upload information about ongoing research so that there will be no duplication of subject of Ph.D. theses. During present study researcher found that some universities are still not submitting theses on Shodhganga after Ph.D. degree awarded hence all universities strictly implement regulation of M. Phil. / Ph. D. 2016 regarding compulsory uploading of theses on Shodhganga.

Orientation programs should be arranged for the research scholars from time to time in order to enable them to exploit the resources of the University library and keep them abreast of the available resources in the University Libraries and also to orient them to follow standard tool for citing documents.
5.5 Areas for Further Research

Researchers can take following subject for study

1. Bibliometric Study of electronic theses in any other subject excluding Library and Information Science on Shodhganga Repositories.

2. Bibliometric study of Marathi literature.

3. Library and Information Science Research in India: Trends and Issues.

4. Comparative study of LIS research in India and other countries.

5. Bibliometric study of Grey literature in some selected subjects.

References