

Thematic Analysis of Doctoral Theses Awarded in Library and Information Science: A Comparative Study of All India Level with Panjab University, Chandigarh: 1950-2017

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ABSTRACT

The study examines 3011 doctoral theses awarded at national level in the discipline of “Library and Information Science” and 62 doctoral theses awarded between 1950-2017 at the “Department of Library & Information Science, Panjab University, Chandigarh”. The analysis is based on the thematic classification of the doctoral theses. At the All-India level, theses have been classified into 68 themes while the 62 doctoral theses awarded by Panjab University are classified into 25 themes, with varying numbers per theme. The decade wise growth of doctoral thesis submitted at “Panjab University, Chandigarh” has been discussed to see the growth over the years. The literature review has made it evident that more focus is on the themes like Library use and user studies and Information and Communication Technology. In the present study, themes that have been arranged in rank and order are also discussed to draw a comparative view of national level themes with the “Panjab University, Chandigarh”. The study also aims to present the similarities and dissimilarities of the doctoral research theses objectively based on their themes.

Keywords: Thematic analysis; Doctoral research; India; Panjab university; LIS; Library and information science

1. INTRODUCTION

For understanding the growth pattern of literature in any discipline, an examination of its research output in terms of research articles published or academic research like doctoral dissertations submitted/awarded is of prime importance. The research is window to gauge the direction of any discipline. Therefore, it is imperative to analyse research output, which has to be divided under themes or subthemes to trace the most sought-after or neglected areas- needing focus in future. “Library and Information Science”, which came into existence about a century ago, is a relatively young subject in comparison to other traditional disciplines. Several methods like bibliometric, co-word analysis, thematic distribution, keyword analysis etc., have been evolved to analyse scholarly production etc. Some researchers have also made use of classification schemes and the list of subject headings.

In India, Dr. S.R. Ranganathan, known as the doyen of library science in India, devised a highly systematic classification for research libraries in 1933. Similarly, Melvil Devvy was a pioneer in American librarianship and he is popular for the decimal classification system that many public and academic libraries use. The present

work’s classification forms the basis of the thematic classification methodology adopted by the “Association of Indian Universities (AIU)”, New Delhi to classify PhD theses in LIS in its publication entitled “Bibliography of Doctoral Dissertations 1980-81: Social Sciences and Humanities”. The same classification methodology has been adopted in the present work for classification of doctoral theses awarded in LIS during 1950-2017.

It is a modest attempt to carry out an in-depth analysis of the doctoral works accomplished at the “Department of Library and Information Science, Panjab University, Chandigarh”, in relation to national level trends in the light of some pertinent research objectives followed by the hypotheses. Before proceeding further, it will be most appropriate to review the existing literature on the theme and inter-connected issues to identify the research gap in the current literature on the theme.

2. LITERATURE REVIEW

Järvelin & Vakkari¹ established that “library and information service activities” and “information storage and retrieval” were the largest groups of topics, designed a new classification scheme to divide research themes in LIS into the eleven main classes. Again in 1993, Jarvelin & Vakkari² made some modifications to their

earlier classification to divide into five main groups, each divided further into more detailed subcategories. Using the bibliometric method, Cano³ provided eleven topic categories.

While examining research tendencies in North Africa, Gdoura⁴ commented that the interest is more on solving technical issues and is solely a “mechanical transplantation” of concepts without considering their “cultural and historical context”. Using the scientometrics analysis method, Davarpanah & Asleikia⁵ classified research into eighteen categories that includes “Communication and information technology”, “Computerised information storage and retrieval”, “Library use and user, Materials and bibliometrics”, “Scientometrics”, “Organisations”, “Knowledge and learning”, “Media, Libraries and resource centres”, “Information communication”, “Bibliographic records”, “Library technology”, “Profession”, “Technical Services”, “Librarianship and information science”, “Records management”, “Reading (information literacy)”, “Bibliographic control”, and Other subjects. Prebor⁶ grouped themes of doctoral research into nine groups with further subgroups to analyse dissertations and doctoral thesis and noted that only a third of the research conducted at LIS departments was flagged on the “ProQuest Digital Dissertations database” under either or both ‘Library Science’ and ‘Information Science’.

Lin & Lio⁷ used bibliometrics to classify LIS research in nine categories including, “Library and Librarianship”, “Library Management”, “Technical Services”, “User Services”, “LIS Theory and Foundation”, “LIS and Technology”, “Book”, “Documentation and Archive”, and Others (Interdisciplinary). Finlay⁸, *et al.* used the bibliometrics method to classify topics of LIS dissertations written between 1930-2009. They concluded that the focus in LIS dissertations on traditional themes related to librarianship is on the decline. Kwalec⁹ classified materials according to “JITA Classification Schema” of “Library and Information Science” and divided topics into three levels, organised under information treatment for information services; Industry, profession and education and Information use; and the sociology of information. Paul-Hus¹⁰, *et al.* followed the controlled topical terms from the ProQuest Subject Categories used by the “ProQuest Thesis and Dissertation Database”. Onyancha¹¹ found that LIS evolved in the 1970s and shifted attention to “scientific communication”, “information storage and retrieval”, “information access”, “information and knowledge management”.

Mokhtarpour & Khasseh¹² analysed LIS research papers published in the core journals between 1990 and 2016 indexed in the ‘Web of Science’. The results indicated that ‘information seeking and retrieval’ is the most researched topic during 1990–2016. The Kleinberg algorithm analysis of the hot spots in LIS research has indicated that ‘Internet’ and ‘World Wide Web’ have

attracted more attention than other themes. Hsiao & Chen¹³ examined LIS sub-fields between 2009 and 2018. They identified six major themes like “applications of technology”, “computer science techniques”, “library services and management”, “health information and technology”, “scholarly communication, and scientometrics”, “information behavior and information retrieval”. Miyata¹⁴, *et al.* revealed that in the first period (2000-2002), ‘information retrieval’ and ‘information search’ were popular topics for research, while in the second (2015-2017), the number of sub-fields in ‘information retrieval’ reduced and in ‘information search’ augmented notably. Mundhial¹⁵, *et al.* has analysed 957 doctoral research work. ICT application in libraries, Information seeking behaviours and management of library and information centres are found to be the most focused themes at the doctoral level of Indian LIS research while least focussed areas are classification, preservation, conservation, intellectual property rights. Järvelin & Vakkari¹⁶ pointed out that change in LIS research had taken place between 1965-2015. They found that LIS research on ‘library and information services’ themes has lost its popularity while ‘scientific and professional communication’ were considered favoured topics. ‘Information storage and retrieval’ was not given prominence towards the end of the years investigated. Dora¹⁷, *et al.* analysed 808 doctoral dissertations awarded between 2016 and 2020 and concluded that there is a growth of 150 theses in LIS at doctoral level every year. “Information seeking”, “library and information service activities”, and “scientific & professional communication” were found to be the preferred research themes among doctoral students. Shivalingaiah, Sheshadri, & Keralapura¹⁸ analysed 851 LIS doctoral theses in India from 1980 to 2007 and concluded that Academic and Public Libraries, Information seeking behaviour, bibliographic/bibliometric/literature study, and LIS education were among the most popular themes.

It emerges from the above discussions that the main basis of efforts made in the direction of thematic classification of doctoral theses in LIS has always been the library cataloguing of the books/literature in the library system for the convenience of the readers.

3. OBJECTIVES

1. Study the thematic pattern of LIS doctoral research at All India level
2. Examine the doctoral research trends at DLIS, Panjab University, Chandigarh
3. Compare national doctoral research trends with DLIS, Panjab University, Chandigarh

4. HYPOTHESIS

The doctoral research LIS at “Panjab University, Chandigarh” is thematically different from that at the national level.

5. DATA SOURCES AND RESEARCH METHODOLOGY

5.1 Data Sources

Both the secondary and primary sources of data/information have been tapped to conduct the present study. Among the secondary sources, “University News” published by “Association of Indian University”; “Social Science in India: A Report Retrospective”, published from “Indian Council of Social Science Research, New Delhi”; “Bibliography of Doctoral Dissertations” published by “Association of Indian Universities”; “Directory of LIS Education in India”, prepared by S.P. Agarwal and others; the website of different universities in India; Shodh ganga, which is a repository of PhD dissertations maintained by INFLIBNET. For scanning through all the doctoral theses awarded by the ‘Panjab University’ in LIS, ‘Central Library’, and the ‘departmental library’ had been consulted. The theses were categorised thematically to prepare the abstract/summary analysis of all the doctoral theses awarded from Panjab University.

5.2 Research Methodology

The study period spans over more than six decades, starting in 1950 and terminating in 2017. The doctoral research program in ‘Library Science’ in India started taking shape in the latter half of the 1940s, and the first doctoral thesis was awarded in the 1950s.

The classification used for present work is based on the thematic classification methodology adopted by the Association of Indian Universities (AIU), New Delhi to classify PhD theses in LIS in its publication entitled ‘Bibliography of Doctoral Dissertations 1980-81: Social Sciences and Humanities. The same classification methodology has been adopted in the present doctoral thesis to classify the doctoral theses awarded in LIS during 1950-2017. A comparison has been drawn between most focused doctoral research themes at national level and DLIS, PU. Based on the thematic classification doctoral research trends at DLIS, Panjab University, Chandigarh has been examined and compared with the national doctoral research trends at DLIS, Panjab University, Chandigarh.

6. DATA ANALYSIS AND INTERPRETATION

6.1 Thematic Classification of Theses at National Level, 1950-2017

During 1950-2017, as many as 3011 doctoral theses awarded (Appendix 1) in the LIS discipline in India can thematically be categorised into 68 themes, giving an average of more than 44 theses per theme. However, the number ranged from a maximum of 442 theses on ‘Library Use and User Studies’ to a minimum of the only thesis each on at least six themes, namely “Translation”, “Library Administration”, “Philosophy and Theory”, “Publication”, “Museum Studies”, and “Digital Repository”.

Top ten popular themes (Fig. 1) were “Library Use and User Studies”, “ICT”, “University Libraries”,

“Personnel”, “College Libraries”, “Bibliometrics”, “Library Network and Information System”, “Scientrometrics”, “Public libraries” and “Electronic Resources”, wherein the number of PhD degrees awarded is more than hundred in each constituted of 59.1 % during 1950-2017. Of the 68 doctoral research themes in which all the 3011 theses awarded in Indian universities in the discipline of LIS during 1950-2017, eighteen or more than one-fourth (26.4 %) themes, which may be termed as highly popular doctoral research themes, subsumed, in combination, more than three-fourths (78.0 %) of total doctoral research degrees awarded in LIS discipline in India during this period. In contrast, 36 or more than half of the total 68 doctoral research themes, which may be termed as low or least popular doctoral research themes, shared only about 8.0 % of total doctoral research theses of the period (1950-2017). The remaining one-fifth (14 doctoral research themes), which may be called moderately popular doctoral research themes of LIS discipline in India, shared one-seventh or 423 doctoral research theses.

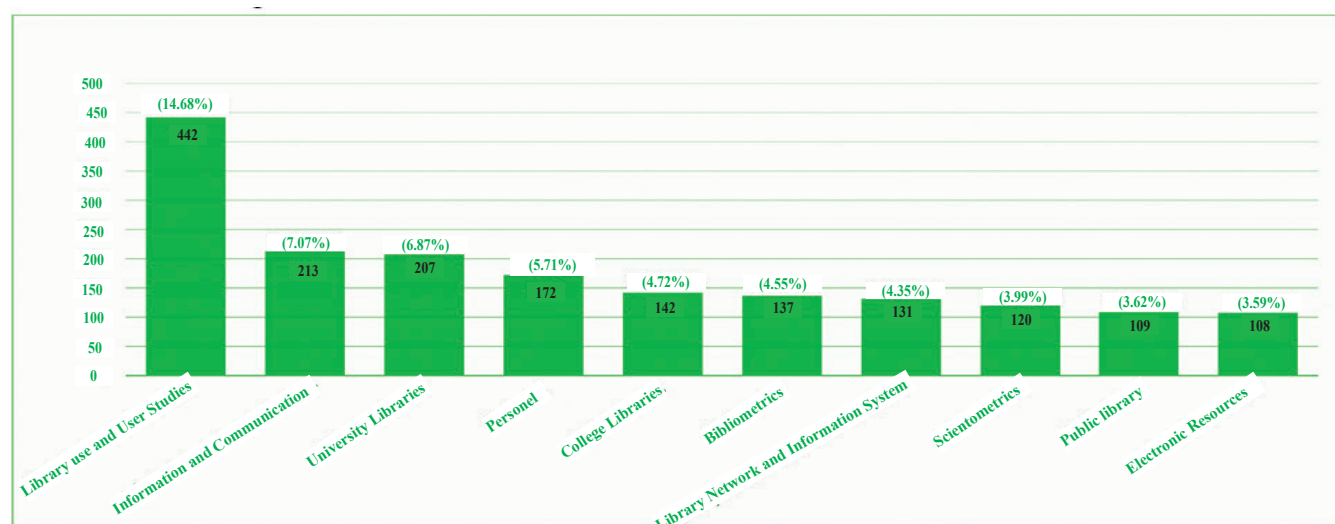
“Library use and user studies”, the top-ranking theme (14.68 %) among all themes, has been distantly followed by “Information and Communication Technology” with 213 theses, making 7.0 % or less than half of the share the first ranking theme had in total doctoral theses rewarded in LIS discipline. This was closely followed by the ‘University Libraries’ with 207 or 6.9 % of the total theses. The studies focusing on library ‘personnel’ made the fourth most-attempted theme, stealing another 172 or 5.7 % of the total 3011 theses awarded during 1950-2017. On the whole, these four sub-fields, in combination, subsumed more than one-third (34.32 %) of the total 3011 doctoral theses.

6.2 Department of Library and Information Science, Panjab University, Chandigarh

All the 62 PhD dissertations (Appendix 2) awarded during 1950-2017 at the “Department of Library & Information Science, Panjab University, Chandigarh” have been thematically classified into 25 themes, giving more than two per the theme. However, the number ranges from a maximum of eleven on ‘Library use and User Studies’ to a minimum of only one on at least thirteen topics. In the following, an attempt has been made to discuss themes arranged in rank and order. Before proceeding to the main discussion, a brief historical background of the doctoral research program in “Library and Information Science” discipline at “Panjab University, Chandigarh” followed by thematic classification of 62 doctoral dissertations awarded from the Department of Library & Information Science, have been presented.

6.2.1 Progress in Doctoral Research Work, 1950-2017

The “Department of Library and Information Science, Panjab University, Chandigarh”, is ranked fifteenth among the University Department awarding doctoral research theses in LIS. It has been awarded 62 PhD till 2017.



Note: Total number of theses = 3011; the ten top-ranking themes are those wherein the number of PhD degrees awarded is more than hundred in each during 1950-2017

Figure 1. Most focused LIS research themes at national level, 1950-2017.

Among 62 theses, one thesis is of Dr. Payare Lal, submitted to the Department of Public Administration. Following the first PhD degree award in the discipline in 1977 to Shri Pandey Suraj Kant Sharma on the topic “Expansion and Modification of Dewey Decimal Classification (18th edition) for classifying Indological Books with Special Reference to Indian Philosophy and Religion”, the Department has not looked back. It was the second PhD in the field of LIS at national level. The progress remained slow till 1980; it picked up fast in the eighties and nineties of the 20th century. With the new millennium, a new phase of acceleration has started with PhD degrees awarded. As many as 38 PhD degrees, making a little more than half of the total PhD degrees awarded till 2017, have been awarded during less than two decades of the 21st Century.

6.2.2 Thematic distribution of Doctoral Theses at ‘Panjab University’, Chandigarh, 1950-2017

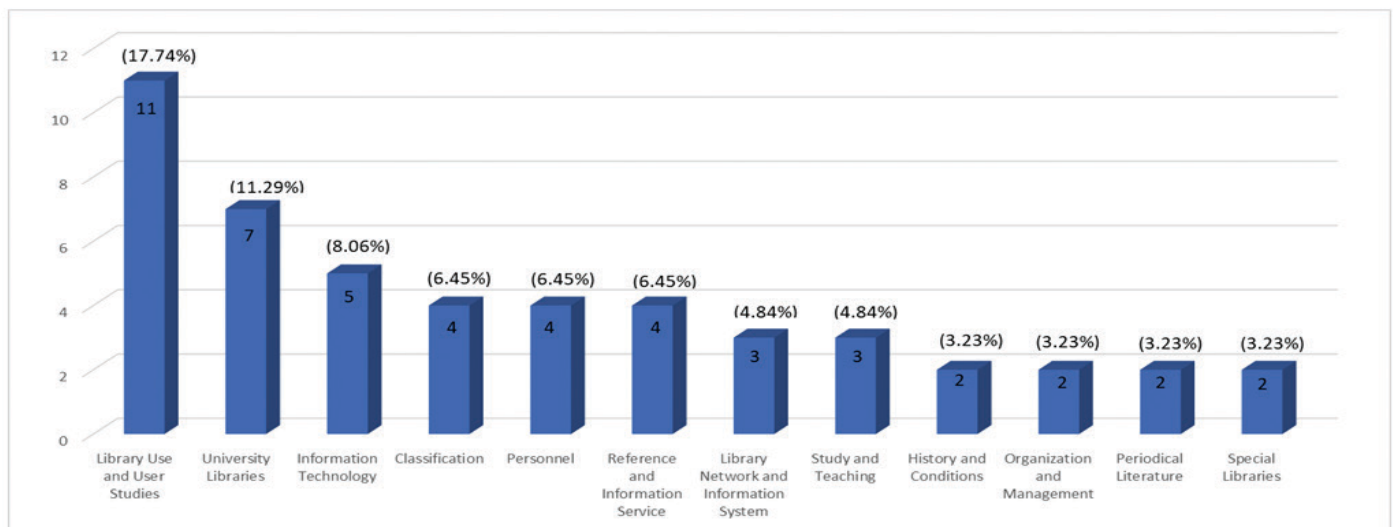
Let’s examine briefly the thematic distribution of PhD theses awarded at Panjab University, Chandigarh in LIS discipline during 1950-2017 (Appendix 2). Of the 25 sub-fields in which 62 PhD dissertations have been categorised, top ten popular themes ((Fig. 2) were ‘Library Use and User Studies’, ‘University Libraries’, ‘Information Technology’, ‘Personnel’, ‘Reference and Information Service’, ‘Library Network and Information System’, ‘Study and Teaching’, ‘History and Conditions’, ‘Organisation and Management’, ‘Periodical Literature’ and ‘Special Libraries’ wherein the number of PhD degrees awarded is 49 (79.0 %).

“Library use and User Studies” is at the top with the award of 11 PhD degrees, making about 18.0 % of total theses. This is the same as the national trend. With 442 or about 15.0 % of the total theses awarded in India as a whole in the discipline of LIS during 1950-2017, “Library use and User Studies” was at the top. However,

its share at the “Panjab University, Chandigarh”, is higher by about 3.0 per cent in total than at the national level. It indicates that the Department of the LIS, “Panjab University, Chandigarh”, has been playing a leadership role at the national level.

It was followed by “University Libraries” with seven PhD degrees, making 11.0 % of total theses awarded. At the national level, this sub-field of the discipline attracted only 7.0 % of the total theses, ranking at third place. ‘Information Technology’ was placed at the third rank with five theses making 8.0 % of the total 62 theses awarded at “Panjab University, Chandigarh”. At the national level, this sub-discipline was ranked second but with a slightly lower percentage share of 7.0 %. “Classification” has been ranked the fourth place with only four theses, making less than 7.0 % of the total. However, ‘Classification’ was not a popular theme at the national level, since it ranked 19th with only 1.0 % of total theses at the national level. ‘Personnel’ was almost equally popular at the Panjab University and the national level. It was ranked fifth at the former and fourth at the latter, with a similar share in both groups (see Fig. 2).

‘Reference and Information Service’, which was ranked 17th at the national level, is at the sixth rank in the case of Panjab University, Chandigarh. It shared less than 2.0 % of total theses at the national level, against more than 6.0 % at Panjab University, Chandigarh level. Obviously, ‘Reference and Information Service’ is considered an important theme of doctoral research at Panjab University, while it is according relatively low priority at the national level. The same is true of ‘History and Condition’. It accorded 9th place (3.23 % of total theses) among the research themes examined at the “Panjab University, Chandigarh”, but was accorded very low priority at the national level. It was ranked at 37th position at the national level with less than 1.0 % of total theses. Similarly, ‘Periodical Literature’



Note: Total number of theses = 62; the ten top-ranking themes are those wherein the number of PhD degrees awarded is 49 (79.0%) during 1950-2017

Figure 2. Most focused LIS research themes at Panjab University during 1950-2017.

was less popular at the national level than at the Panjab University, Chandigarh. However, 'Library Network & Information' and 'Special Libraries' were given almost the same importance as doctoral research themes at the national and Panjab University levels.

On the other side of the scale, there are at least thirteen sub-fields, where only one thesis has been awarded at "Panjab University, Chandigarh" during the study period. Against this, only six themes were recording a single thesis against them at the national level. Interestingly, none of such themes was familiar in the topics researched at Panjab University, Chandigarh and the national level. Further, there was one doctoral thesis even at the national level. Similarly, a topic such as 'Bibliometrics', which was quite a popular theme at the national level, is less popular at the Panjab University, Chandigarh level.

7. DISCUSSION

A comparison between the thematic classification of PhD theses in LIS awarded at Panjab University, Chandigarh with that of awarded at the national level is highly revealing. Some of the doctoral research themes are equally popular/unpopular at both levels. While, some of the research themes were popular at the national level but least popular at the Panjab University, Chandigarh level and vice versa. For example, doctoral research themes such as Library Use and User Studies, University Libraries, Information Technology and Personnel were highly popular both at the national and Panjab University level. Similarly, themes such as Cost-Benefit Analysis, History and Conditions, Library Building and Subject Indexing were least popular at both levels.

On the other side of the scale, differences were also evidently clear. For example, themes such as "Scientometrics", "Study and Teaching", "Organisation and Management", "Bibliometrics", and "Special Libraries" fall under the category of highly popular doctoral research themes at

the national level but fall under the least popular category at 'Panjab University', Chandigarh. Further, "Periodical Literature", "Preservation and Conservation", "Science and Technical Libraries" and "Marketing of Information" fall under the moderately popular category of themes at the national level and but under the least popular category at Panjab University level. Finally, Philosophy and Theory, as a doctoral research theme, has been overlooked by both.

Such findings partially validate our hypothesis that doctoral research in LIS at Panjab University, Chandigarh will be thematically different from that at the national level. Our analysis reveals that there are similarities as well as clear cut differentials in the thematic selection of doctoral research themes at the two levels.

Thematically the 62 PhD theses awarded in LIS at "Panjab University, Chandigarh" can be classified into 25 sub-fields of LIS discipline, giving an average of more than two theses per sub-field. However, the number varied from a maximum of eleven theses on 'Library Use and User Studies' to a single thesis on as many as 13 themes. Against this, 3011 theses accomplished at the national level are grouped into 68 sub-fields, giving an average of more than 44 PhD theses per theme, the actual number varying from a high of 442 theses on 'Library Use and User Studies' to less than five theses on at least 17 themes. On the whole, there are both similarities as well as differentials about the thematic distribution of doctoral theses accomplished in the LIS discipline at the national and the Panjab University, Chandigarh.

8. CONCLUSION

From the above discussions it is clear that there are both similarities as well as differentials about the thematic distribution of doctoral theses accomplished in the LIS discipline at national level and DLIS, Panjab University, Chandigarh. There is a polarisation of themes where six top-ranking themes viz. Library Use and

“User Services”, “University Libraries”, “Information Technology”, “Classification, Personnel”, and “Reference and Information Service”, which make less than one-fourth in total 25 themes explored till 2017. These 6 top ranking themes subsumed more than half (56.0 %) of total PhD theses awarded at national level. Some of the themes such as “Philosophy and Theory”, “Disaster Management”, “Library Administration”, and “Children Literature” have been almost completely overlooked. The data on thematic classification of DLIS Panjab University highlights both the areas i.e. most focused themes and areas that have been overlooked. The sixty-two doctoral theses awarded by the Panjab University, Chandigarh during 1950-2017, make 2.0 % of the total theses (3011) awarded at all India level. To sum up, there were quite similar themes researched at the doctoral research level both at the national and “Panjab University, Chandigarh” with subtle differences between the two. The theoretical, conceptual and methodological themes in research at PhD level were completely missing both the national and “Panjab University, Chandigarh” levels.

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Dr. Shiv Kumar working as an Assistant Professor in the Department of Library and Information Science Department at Panjab University, Chandigarh, Dr Shiv Kumar holds his doctoral research degree in the subject of Library and Information Science from Panjab University, Chandigarh. Earlier, he did MSc in Geology followed by a Masters in Library and Information Science. Dr. Kumar mentored and guided the author in shaping the present research work. He immensely helped in reviewing the paper to complete the information gap.

Appendix 1. Thematic classification of doctoral theses in LIS by sub-field at national level, 1950-2017

S. No.	Theme	No. of theses (%)	Cumulative frequency (%)	Rank
1.	Library use and user studies	442 (14.68)	442(14.68)	1
2.	Information and communication technology	213(7.07)	655(21.75)	2
3.	University libraries	207(6.87)	862(28.63)	3
4.	Personnel	172(5.71)	1034(34.34)	4
5.	College libraries	142(4.72)	1176(39.06)	5
6.	Bibliometrics	137(4.55)	1313(43.61)	6
7.	Library network and information system	131(4.35)	1444(47.96)	7
8.	Scientometrics	120(3.99)	1564(51.94)	8
9.	Public library	109(3.62)	1673(55.56)	9
10.	Electronic resources	108(3.59)	1781(59.15)	10
11.	Study and teaching	95(3.16)	1876(62.30)	11
12.	Special libraries	92(3.06)	1968(65.36)	12
13.	Organization and management	83(2.76)	2051(68.12)	13
14.	Interdisciplinary studies	68(2.26)	2119(70.38)	14
15.	Automation	65(2.16)	2184(72.53)	15
16.	Information storage and retrieval	57(1.89)	2241(74.43)	16
17.	Reference and information service	56(1.86)	2297(76.29)	17
18.	Citation analysis	51(1.69)	2348(77.98)	18
19.	Classification	44(1.46)	2392(79.44)	19
20.	Periodical literature	38(1.26)	2430(80.70)	20
21.	Academic libraries	36(1.20)	2466(81.90)	21
22.	Bibliographic control and analysis	35(1.16)	2501(83.06)	22
23.	Reference and information source	34(1.13)	2535(84.19)	23
24.	Resource sharing	30(1.00)	2565(85.19)	24
25.	Marketing of information	29(0.96)	2594(86.15)	25
26.	Indexing and abstract	28(0.93)	2622(87.08)	26
27.	Total quality management	27(0.90)	2649(87.98)	27
28.	Preservation and conservation	27(0.90)	2676(88.87)	27
29.	Digital libraries	26(0.86)	2702(89.74)	28
30.	Science and technical libraries	25(0.83)	2727(90.57)	29
31.	Consortia	24(0.80)	2751(91.36)	30
32.	Open access	20(0.66)	2771(92.03)	31
33.	School libraries	18(0.60)	2789(92.63)	32
34.	Cataloguing	18(0.60)	2807(93.22)	32
35.	Intellectual property rights	17(0.56)	2824(93.79)	33
36.	Legislation	16(0.53)	2840(94.32)	34
37.	History and conditions	16(0.53)	2856(94.85)	34
38.	Literature survey and bibliographical study	13(0.43)	2869(95.28)	35
39.	Cost benefit analysis	12(0.40)	2881(95.68)	36
40.	Research libraries	11(0.37)	2892(96.05)	37
41.	Government libraries	10(0.33)	2902(96.38)	38
42.	Subject analysis and control	9(0.30)	2911(96.68)	39
43.	Thesaurus	8(0.27)	2919(96.94)	40
44.	Librarianship	8(0.27)	2927(97.21)	40
45.	Knowledge	7(0.23)	2934(97.44)	41
46.	Reference tools	7(0.23)	2941(97.68)	41
47.	Documentation	7(0.23)	2948(97.91)	41

48.	Manuscripts	7(0.23)	2955(98.14)	41
49.	National library	6(0.20)	2961(98.34)	42
50.	Human resource	5(0.17)	2966(98.51)	43
51.	Library movement	5(0.17)	2971(98.67)	43
52.	Archives	4(0.13)	2975(98.80)	44
53.	Comparative librarianship	4(0.13)	2979(98.94)	44
54.	Subject indexing	4(0.13)	2983(99.07)	44
55.	Webometrics	4(0.13)	2987(99.20)	44
56.	Library buildings	4(0.13)	2991(99.34)	44
57.	Library associations	4(0.13)	2995(99.47)	44
58.	Disaster management	2(0.07)	2997(99.54)	45
59.	Children libraries	2(0.07)	2999(99.60)	45
60.	Collection development	2(0.07)	3001(99.67)	45
61.	Children literature	2(0.07)	3003(99.73)	45
62.	Information literacy	2(0.07)	3005(99.80)	45
63.	Translation	1(0.03)	3006(99.83)	46
64.	Library administration	1(0.03)	3007(99.87)	46
65.	Philosophy and theory	1(0.03)	3008(99.90)	46
66.	Publication	1(0.03)	3009(99.93)	46
67.	Museum studies	1(0.03)	3010(99.97)	46
68.	Digital repository	1(0.03)	3011(100.00)	46
	Total	3011(100.00)		

Appendix 2. Theme-wise breakup of doctoral theses awarded by Panjab University, Chandigarh during 1957-2017

S. No.	Theme	Number (%)	Cumulative frequency (%)	Rank
1.	Library use and user studies	11 (17.74)	11(17.74)	1
2.	University libraries	7 (11.29)	18 (29.03)	2
3.	Information technology	5 (8.06)	23 (37.10)	3
4.	Classification	4 (6.45)	27(43.55)	4
5.	Personnel	4 (6.45)	31(50.00)	4
6.	Reference and information service	4 (6.45)	35(56.45)	4
7.	Library network and information system	3 (4.84)	38(61.29)	5
8.	Study and teaching	3 (4.84)	41(66.13)	5
9.	History and conditions	2 (3.23)	43(69.35)	6
10.	Organisation and management	2 (3.23)	45(72.58)	6
11.	Periodical literature	2 (3.23)	47(75.81)	6
12.	Special libraries	2 (3.23)	49(79.03)	6
13.	Archives	1 (1.61)	50(80.65)	7
14.	Automation	1 (1.61)	51(82.26)	7
15.	Bibliometrics	1 (1.61)	52(83.87)	7
16.	Citation analysis	1 (1.61)	53(85.48)	7
17.	Consortia	1 (1.61)	54(87.10)	7
18.	Cost benefit analysis	1 (1.61)	55(88.71)	7
19.	Library buildings	1 (1.61)	56(90.32)	7
20.	Marketing of information	1 (1.61)	57(91.94)	7
21.	Open access	1 (1.61)	58(93.55)	7
22.	Preservation and conservation	1 (1.61)	59(95.16)	7
23.	Science and technical libraries	1 (1.61)	60(96.77)	7
24.	Scientometrics	1 (1.61)	61(98.39)	7
25.	Subject indexing	1 (1.61)	62(100.0)	7
	Total	62 (100.0)	62(100.0)	