Information Sources in Library and Information Science Doctoral Research

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A citation analysis of 61 library science and information science dissertations revealed some interesting publication patterns. About 80% of the citations are to single authors, and as in analyses of periodical literature, males are cited more than females overall (about 61% to 39%). In dissertations related to school or public libraries, the male/female distribution is less disparate; for studies in academic or special libraries two thirds of the authors are male, and male authorship is 75% when only information science dissertations are analyzed. Journal articles are cited more than books, book chapters, proceedings, theses, and other formats with *College & Research Libraries* and *Journal of the American Society for Information Science* used most. Library and information science is impacted by several other disciplines, primarily education, computer science, health/medicine, psychology, communications, and business. Authors cited in dissertations represent a somewhat less parochial list in terms of citing U.S. publications than authors cited in studies analyzing journal citations; over half of all works cited were published within the last 10 years.

Librarians and information specialists are concerned with how scholars in various disciplines use resources in order to provide information services and build collections that best meet user needs. The major INFROSS (Information Requirements of Social Scientists) study (Line, 1971) served as a model for many subsequent investigations of how scientists (Von Seggern, 1995), humanists (Stone, 1982), and other social scientists (Case, 1986; Folster, 1995; Ford, 1986) use the library and information sources. There has been little research related to how scholars in library and information science access information for their own professional and research needs, or that describes the nature of the literature that they utilize.

The importance of research for the growth and development of the knowledge base of a discipline is obvious. The doctoral dissertation is evidence of the

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author's ability to engage in an extensive scholarly endeavor. It represents a very formal and focused form of research, and the citations in it reflect the author's familiarity with the state of the art of a topic with respect to related research and disciplines, issues and theory (Libutti & Kopala, 1995; Wiersma, 1991). Because the dissertation represents the student's culminating endeavor to address ideas at the forefront of a field or to study in-depth recurring problems and issues, citation analysis of library and information science dissertations can identify the information sources that meet the needs of scholars in the field. Although citation analysis has been a popular way of studying authors' contributions, characteristics of the literature, and the flow of information in library and information science, only a few studies (Farid, 1984; La Borie & Halperin, 1976; and Zipp, 1996), have done so using dissertations.

PURPOSE OF THE STUDY

The purpose of this study is to analyze library and information science dissertations to answer the following questions:

- What is the gender of authors cited? Are male authors in dissertations categorized under information science in *Dissertations Abstracts International* cited at the same rate as they are in dissertations categorized under library science?
- What is the nature of material being cited most?
- What journals are cited most?
- How much do library and information science dissertations cite other fields?
- What are the countries of origin of publications cited?
- How current is the literature cited? Is it similar to the sciences in terms of its recency, or does it match more closely the "softer" social sciences literature?

REVIEW OF THE LITERATURE

Gender

It is important to understand how much male and female authors are contributing to the development of the theoretical and knowledge base of a field. In a study comparing the publishing patterns of male and female Ph.D.s, Korytnyk (1988) pointed out the correlates of high publication rates of males with their advancement and status in the field of librarianship. She summarized studies related to gender and publication rate (Adamson & Zamora, 1981; Cline, 1982; Estabrook & Heim, 1980; Olsgard, 1980; Cline, 1982). These and later analyses (Alemna & Badu, 1994; Buttlar, 1991) pointed out that while there are more fe-

males than males in the field, the publication rate of males was disproportionately high, although some later studies suggest that this gap is closing (Metz, 1989; Terry, 1996).

Format/Nature of Material

La Borie and Halperin (1976) found that materials cited in library science doctoral dissertations could be divided into eight major categories: books, journals, unpublished materials, annual reports, reports, proceedings, dissertations, and newspapers. As early as 1966 Bloomfield (1966) found that journals were cited more frequently by librarians than other formats, although Broadus (1971) found books and other materials listed more frequently than journal literature in the social sciences in general. Discrepant results have been reported in subsequent studies. For example Abrera (1987) found that 67% of the citations were to journal articles, 16% to parts of books, 11% to monographs, and 5% to dissertations, while Seng and Willett (1995) found that when faculty publications were analyzed 39% cited academic journal articles, 14% conference proceedings and 14.6% chapters in books. Schrader and Beswick (1989) and Lockett and Khawam (1990) claim an increasing use of journal literature.

Christine Thompson (1991) used citation analysis to compare the literature of library science and that of information science. She suggested that information science might be more of a "hard science" than library science, based on a greater number of journal citations, as well as the number of citations per article analyzed, but indicated that more research should be conducted before any firm conclusions were drawn.

Journal Rankings

The scholarly journal is recognized not only as the intellectual base of a discipline, but as the major means of disseminating information and innovative ideas based on research (Cline, 1982). In the United States, Lockett and Khawam (1990) found *College & Research Libraries* and *Journal of Academic Librarianship* to be the most frequently referenced journals. In studies of international journals, both Aina (1991) and Raptis (1992) found *International Information and Library Review* the most frequently cited.

Interdisciplinarity

In his discussions of the flow of ideas, Chubin (1976) discusses Bradford's notions of "core and scatter" noting that while a discipline is centered around an intellectual core, knowledge about communication outside the core (or scatter) indicates how disciplines overlap. It is important for information professionals to understand the dynamics of knowledge overlap in research, especially since hypertext technology has facilitated cross disciplinary exchanges.

Previous studies have attempted to determine how much library science as a discipline was open to influences from other fields by comparing the percentage of citations to works outside the discipline to the percentage of citations from inside the field. Earle and Vickery (1969) defined citing from inside the field as "self citation." Broadus (1971) found that library science dissertations cite more within their discipline than to other disciplines and concluded that library science research is less interdisciplinary than the social sciences in general. This was confirmed by Gatten (1991) who stated that, while, according to Klein (1990), social science scholars are becoming increasingly interdisciplinary in their approach to research, authors in library science tend to cite their own body of literature. Analyzing citations from articles on the topic of "sociological aspects of libraries" in both sociology and library science journals, Gatten concluded that in the articles from sociology journals approximately 19% of all citations were to journals in sociology while 26% were to library science journals. On the other hand, in the library science journal articles 52% of the citations were to journals in library science and only 3% were to sociology journals. He says it appears that sociology research into libraries is more likely to consider previous studies in library science, while research in library science does not consult the field of sociology when examining sociological topics (Gatten, 1991). Others have suggested that library science is an insular field with limited interactions with and impact on other disciplines (Meyer & Spencer, 1996; Saracevik & Perk, 1973). So (1988) concluded that library and information science has increased the level of its citations from other fields, which may indicate the field is maturing and increasing its other-field affinity. Bracken and Tucker (1989) found that library science authors cited other library science articles 74% of the time and sources outside the field 26% of the time, which is close to Bluma Peritz's conclusion that the "self citation" rate of the field was approximately 80% (Peritz, 1981). Rice and Crawford (1992) found that library and information science cites far more communication articles than vice versa. And, finally, Riitti Karki (1996) says that information science has often been regarded as a good example of a specialty area that is remarkably interdisciplinary by nature, but that there is not very much empirical evidence either to support or to refute this assumption.

Country

Herman (1991) found that authors in the United States cited somewhat fewer foreign library and information science journals than British authors did, although both cited their own national literatures to a greater proportion (91%) than their total representation in the pool of citable articles. Her findings concurred with those of Folster (1995) who found that only 7.4% of the article citations were to journals published outside the United States and La Borie and Halperin (1976) who also found that relatively little foreign literature is used by doctoral candidates.

Currency

Several investigators concluded that library and information science relies primarily on relatively current references (Li, 1980; Lockett & Khawam, 1990). Although very recent data comparing library and information science citations to those of the social sciences in general were not found, Peritz (1981) dichotomized citations into those that were seven years old or more and those that were less than seven years old. She found that 25% of the citations in library and information science journals were aged seven years or more, and concluded that the median age of citations in the field was lower than the median age in the social sciences in general. She suggested that a better cut-off point for dichotomizing the citations would have been five years as indicated earlier by Price (1970). St. Clair and Magrill (1992) conducted a citation analysis of undergraduate student papers and found that the median age for all citations ranged from four years old for psychology titles, 8 years for those in political science, and sixteen and seventeen years for sociology and education, respectively. Womack (1997) found that the journal literature cited in library and information science dissertations was significantly more current for journal than non-journal format, supporting previous research (Lockett & Khawam, 1990).

METHODOLOGY

In a historical review of the literature on bibliometrics and citation analysis in particular, Farideh Osareh (1996) claims that citations are easily obtainable, unobtrusive, and nonreactive. In other words, they do not require the participation of a respondent and are, thus, an indirect, uncontaminated source of data. Therefore, in order to determine the information sources used by doctoral students in the field of library and information science, a bibliometric study was considered appropriate.

The original goal was to analyze approximately 50 or 60 dissertations that were available free on an interlibrary basis. Early in 1997 abstracts in *Dissertations Abstracts International* under the sections of Library Science and Information Science were analyzed. Beginning with the most current volume and working backwards 67 titles representing dissertations from 17 different American Library Association (ALA) accredited library and information science programs were ordered. A total of 61 dissertations was available for analysis. This represents 47% of the total number of dissertation abstracts of research conducted at ALA-accredited programs from July 1994 through March of 1997. The abstract, title page, and references cited in the bibliography of each paper were photocopied for transfer of information to coding sheets.

Each dissertation was coded in terms of how it was categorized (library science or information science), author gender, degree-granting institution, the type of library investigated, subject, and the total number of citations included.

The types of library categories were public, academic, special, and school; some dissertations did not fit in any of these specific categories because their content or purpose of investigation was related to any type of library. These were coded in a general category which meant the content was applicable to all library settings. Another additional category was designated non-library settings. Subject categories assigned included the broadest divisions of library work: public services, technical services, systems/automation, and administration. Some papers that would fall under public services were devoted to only bibliographic instruction or collection management, so these topics were made separate categories. An additional category of other was included.

A total of 7,980 citations was coded with respect to the gender of the author(s), format of publication, discipline, country, and year of publication. If the citation gave author's initials only, instead of first and middle names, a variety of databases (e.g., OhioLInk, WorldCat, *Library Literature*, *Education Index*, ERIC, Applied Science and Technology, and PsychLit) were consulted to determine the author's full name and allow inference about gender. In the case of multiple authors, gender data was coded for all authors. None of the citations had more than four authors. In the case of discipline, if a citation referred to an article in *Library Journal* or *American Anthropologist*, it was coded as representing the disciplines of library and information science and anthropology, respectively. Titles not as obviously discernible (e.g., citations to the journal *Daedalus*) were looked up in the OhioLink central catalog and the discipline coded corresponded to the Library of Congress classification.

FINDINGS

Dissertations Analyzed

Of the 61 dissertations, 47 were listed under the heading of "Library Science"; 14 were listed under "Information Science." The dissertations were written at 17 different institutions offering degrees in library and information science, all of which lend dissertations free of charge. For this reason, the largest number of dissertations (20 or 32.8%) came from Florida State University, followed by the University of Illinois with 9 or 14.8% (see Table 1).

The gender of one author was not discernible but 43 of the authors were females (71.7%) and 17 (28.3%) were males. By perusal of the abstract, the investigator analyzed dissertations as to the type of library they addressed (public, academic, special, school). Forty one studies (67.2%) focused on specific types of library settings, with academic library setting most popular (19 or 31.1%). However, 16 (26.2%) covered topics applicable to all types of libraries, rather than a specific library setting, and four represented non-library settings (see Table 2). With respect to subjects, the largest number (12 or 19.7%) was devoted to public services. When bibliographic instruction was included, this percentage rose to over 30% (see Table 3). Other popular subjects were related to adminis-

TABLE 1
Distribution of Dissertations by Institutions

Institution	*Frequency*	*%*
Florida State University	20	32.79
University of Illinois, Champaign	9	14.75
University of North Carolina, Chapel Hill	7	11.47
University of Pittsburgh	6	9.83
Indiana University	3	4.92
University of Michigan	2	3.28
Drexel University	2	3.28
University of Alabama	2	3.28
Rutgers University	2	3.28
University of Hawaii	1	1.64
University of California, Los Angeles	1	1.64
Texas Women's University	1	1.64
University of South Carolina	1	1.64
University of Wisconsin, Madison	1	1.64
State University of New York, Buffalo	1	1.64
University of California, Berkeley	1	1.64
University of Texas, Austin	1	1.64
Total	61	100.00

tration (9 or 14.8%) and automation or library or information systems (8 or 13.1%). Some topics coded as "other" included five studies related to international and comparative librarianship and four to library and information science education. The number of citations (unique bibliographic references) per dissertation varied from 40 to 439 with 131 representing the mean number of citations included in each dissertation (see Table 4). Journals identified as library science dissertations had a mean number of 144 citations; those identified as information science dissertations had a mean number of 126.

TABLE 2
Distribution of Dissertations by Type of Library

Type of Library	*Frequency*	*%*
Academic	19	31.1
General (all libraries)	16	26.2
Special	10	16.4
School	10	16.4
Non-library settings	4	6.6
Public	2	3.3
Total	61	100.0

TABLE 3
Distribution of Dissertations by Type of Broad Subject Coverage

Subject	*Frequency*	*%*
Public services	12	19.7
Administration	9	14.8
Automation/Systems	8	13.1
Collection management	7	11.5
Bibliographic instruction	7	11.5
Technical services	5	8.2
International/Comparative librarianship	5	8.2
Library and information science education	4	6.6
History/Biography	2	3.3
Other	1	1.6
Research	1	1.6
Total	61	100.0

Citations Analyzed

Number of Authors. Almost 80% of the citations were to works by a single author and 16% percent had two authors. None of the citations were authored by more than four individuals (see Table 5).

Gender of Author. Of the 7,980 total citations, it was possible to determine first author gender for 7,540 of them. Of these citations, 4,620 (61.3%) represented male authors, 2,356 (31.2%) represented female authors, and 563 (7.5%) works for which corporate bodies were responsible. Of the 2,115 subsequent authors, 1,307 (62%) were males and 808 (38%) were females; the percentages were almost identical for first and secondary authors of a work.

TABLE 4
Distribution of Dissertations by Number of Citations*

Number of Citations	*Frequency*	*%*
≤50	4	6.56
51-100	21	34.43
101-150	16	26.23
151-200	10	16.39
201-250	7	11.47
251-300	2	3.28
301-350	0	0
351-400	0	0
401-450	1	1.64
Total	61	100.00

Note: *Mean = 131.

TABLE 5
Distribution of Citations by Single or Multiple Authorship

Authorship	*Frequency*	*%*
Single author	6,340	79.45
Two authors	1,283	16.08
Three authors	274	3.43
Four authors	83	1.04
≥5	0	0
Total	7,980	100.00

Citations in dissertations that appeared under the Information Science section in *Dissertations Abstracts International* were even more likely to be authored by males (74.24% males and 25.76% females) as compared to those categorized as library science dissertations (62.5% males and 37.35% females). Differences in cited author gender were also noted by type of library setting. Gender of authors cited in dissertations related to public and school libraries was more or less evenly split; for studies in academic or special library settings, the distribution reflected a larger number of male authors (about two-thirds) than female authors in each case (see Table 6). It should be noted that some dissertations did not apply to a particular type of library setting and authors to their citations were not considered here.

Format of Publication. The majority of citations (about 84%) are to either journal articles (46%), books (31%) or chapters in books (7%). Other theses and dissertations (336 or 4.21%), proceedings (178 or 2.23%), and reports (171 or 2.14%) were also cited fairly frequently. Although analysis of dissertation citations resulted in a wider range of formats cited, almost all additional publication formats were represented on a minimal basis, in strong agreement with the recent findings of Seng and Willett (1995).

The proportion of journal articles cited was not higher in those dissertations categorized as information science to indicate that information science resembled a "hard science" as suggested in the literature (Thompson 1991). In fact, in

TABLE 6
Distribution of Citation Author Gender by Type of Library Setting

	Gender			
	Male		*Female*	
Library Setting	*Frequency*	*%*	*Frequency*	*%*
Public Libraries	109	52.91	97	47.09
Academic Libraries	2,035	65.77	1,059	34.23
Special Libraries	898	65.79	467	34.21
School Libraries	560	51.61	525	48.39

this particular sample, the opposite was true with more books and book chapters and fewer journals cited for information science than library science dissertations (see Table 7).

Rank Order of Journals Cited. A total of 3,683 citations to the journal literature represented 815 different journal titles. *College & Research Libraries* and *Journal of the American Society for Information Science* were each cited 143 times representing 3.88% of the total citations each. The next most popular title was *Library Journal*, cited 110 times (2.99%), followed by *Library Trends* (101 citations or 2.74%). Two journals representing special libraries were also very popular: *Bulletin of the Medical Library Association* was cited 85 times (2.31%) and *Law Library Journal* 74 times (2.01%). It should be noted that one disser-

TABLE 7
Distribution of Publications Cited by Format and Dissertation Category

	Information Science		*Library Science*		*All Dissertations*	
Format	*Frequency*	*%*	*Frequency*	*%*	*Frequency*	*%*
Books/Monographs	777	38.68	1,767	29.59	2,544	31.88
Journal articles	869	43.25	2,814	47.13	3,683	46.15
Theses/Dissertations	44	2.19	292	4.89	336	4.21
Newspapers	11	.55	15	.25	26	.33
Government documents	4	.20	7	.12	11	.14
Unpublished manuscripts	7	.35	28	.47	35	.44
Proceedings	28	1.39	150	2.51	178	2.23
Encyclopedias	12	.60	30	.50	42	.53
Papers	19	.95	48	.80	67	.84
Reports	23	1.14	148	2.48	171	2.14
ERIC documents	4	.20	69	1.16	73	.91
Interviews	1	.05	7	.12	8	.10
Correspondence/Memos	1	.05	5	.08	6	.08
Newsletters	3	.15	33	.55	36	.45
Pamphlets	2	.10	11	.18	13	.16
Internet	0	.00	8	.13	8	.10
Computer software	1	.05	2	.03	3	.04
Chapters in a book	196	9.75	388	6.50	584	7.32
Tests	0	.00	1	.02	1	.01
Bibliographies	1	.05	45	.75	46	.58
Directories	2	.10	32	.54	34	.43
Speeches	0	.00	5	.08	5	.06
Dictionaries	3	.15	40	.67	43	.54
Audio recordings	0	.00	3	.05	3	.04
Exhibits	0	.00	2	.03	2	.02
Minutes of meetings	1	.05	5	.08	5	.06
Other	1	.05	16	.27	17	.21
Total	2,009	100.00	5,971	100.00	7,980	100.00

tation alone accounted for 67 of the citations to *Law Library Journal.* Other core journals identified as a result of this analysis are *Journal of Academic Librarianship*, *RQ*, *Journal of Documentation*, and *Library & Information Science Research* (see Table 8). Even though only 14 of the 61 dissertations were categorized as information science dissertations, five of the top 15 journals are devoted to this emphasis. The popularity of *College & Research Libraries* and other highly ranked journals might indicate that librarians publishing research are more likely to be those in higher education settings, or might simply reflect the fact that in this sample, at least, a large share of the dissertations investigated topics related to academic librarianship.

Subject Disciplines Represented by Citations. The dissertations in library and information science cited sources from their own field about 50% of the time. This does not support the previous research of Bracken and Tucker (1989) and Peritz (1981) who found that 74% and 80%, respectively, of the cita-

TABLE 8
Rank Order of Top Twenty-five Journals by Frequency of Citation

Rank	Journal	Frequency	%*
1	*College and Research Libraries*	143	3.88
2	*Journal of the American Society for Information Science*	143	3.88
3	*Library Journal*	110	2.99
4	*Library Trends*	101	2.74
5	*Bulletin of the Medical Library Association*	85	2.31
6	*Law Library Journal*	74	2.01
7	*Journal of Academic Librarianship*	64	1.74
8	*RQ*	57	1.55
9	*Journal of Documentation*	49	1.33
10	*Library and Information Science Research*	48	1.30
11	*Journal of Education for Library and Information Science*	47	1.28
12	*Journal of Library Administration*	44	1.19
13	*Reference Librarian*	43	1.19
14	*Information Processing and Management*	42	1.14
15	*Library Hi Tech*	41	1.11
16	*School Library Media Quarterly*	38	1.03
17	*Special Libraries*	38	1.03
18	*American Libraries*	37	1.00
19	*Research strategies*	35	.95
20	*Scientometrics*	35	.95
21	*Library Quarterly*	32	.87
22	*Information Technology and Libraries*	31	.84
23	*Journal of Information Science*	30	.81
24	*Management Information Systems Quarterly*	29	.79
25	*Communications of the Association for Computing Machinery*	28	.76

Note: *Percentage based on 3,683 (total number of journal citations)

tions were to the field of library science. Likewise, dissertation authors did not support Gatten's (1991) conclusion, in his study of interdisciplinary research paradigms, that researchers in library science had a strong tendency to cite their own body of literature excluding relevant research from other disciplines. The present study found that the field of education was represented in 909 (11.45%) of the citations. This number would be even higher if the 185 citations (2.33%) to the field of educational psychology were also included. The field of computer science was third highest (5.72%) on the list of subjects that represent the cross-disciplinary nature of the dissertation citations, followed by health/medicine (3.79%). An interesting observation to be made is that the disciplines represented by citations outside of the field also correspond very closely to those identified by Meyer and Spencer (1996) as those that cite library science, namely computer science, medicine, psychology, social sciences and general sciences (see Table 9). It would appear that the field is not static in terms of interdisciplinarity, but rather is dynamic and evolving in terms of other disciplines that influence it.

Country of Publication. Most of the works cited (6,567 or 83.08%) were published in the United States, followed by 8.38% published in Great Britain. The top five countries in terms of publication frequency were the United States, Great Britain, Canada, the Netherlands, and Germany (see Table 10).

These findings suggest that, while library and information science dissertation authors cite a preponderance of sources published in the United States, they are not as parochial as the Herman (1991) and Folster (1995) studies would indicate where citations to the national literature were 91% and 91.6%, respectively. In addition, it probably indicates that researchers, even at the doctoral level, tend to use the sources most available to them.

Currency of Publication. Works published from 1990 to 1995 represent citations that are five years old or less in terms of currency. It can be seen from Table 11 that the two time periods representing citations published in the past five years before completion of the dissertation and the second five years are approximately equal in terms of the number of citations. When combined, it can be seen that about half of the citations in these library and information science dissertations are to sources that are equal to or less than 10 years old. The dissertation is usually a process that extends over a period of time, due not only to the comprehensiveness of the research, but also because of the time required to accommodate the entire formal process. Therefore, it is not surprising that less than 3% of the items cited had been published within the past two years or less. When citations in dissertations categorized as library science versus information science were compared, only slight differences could be observed. Suggestions that information science is more closely identified with the scientific or "hard science" model of research because of the recency citations (Lockett & Khawam, 1990; Thompson, 1991) could not be supported.

TABLE 9
Distribution of Citations by Subject Discipline

Discipline	*Frequency*	*%*
Library and information science	3,933	49.54
Education	909	11.45
Computer science	454	5.72
Health/Medicine	301	3.79
Sociology	301	3.79
Psychology	205	2.58
Educational psychology	185	2.33
Research methods	184	2.32
Communications	156	1.96
Business	151	1.90
Economics	146	1.84
Science, General	145	1.83
Fine Arts	134	1.69
Literature	123	1.55
History	104	1.31
Statistics	90	1.13
Architecture	71	.90
Philosophy	57	.72
Technology	55	.69
Chemistry/Physics	49	.62
Linguistics	37	.47
Engineering	28	.35
Anthropology	24	.30
Political Science	19	.24
Law	18	.23
Languages	16	.20
Biology	12	.15
Geography/Geology	11	.14
Mathematics	9	.11
Public Administration	5	.06
Other	7	.09
Total	7,939	100.00

CONCLUSION

While there is a lot of variation in the findings related to the literature cited in dissertations, there are also some rather consistent patterns. For example, the number of citations per dissertation varied from as few as 40 to as many as 439. This difference did not appear to be a factor of dissertation type (library science versus information science). Dissertation authors cite male authors almost twice as much as they cite female authors which could support earlier findings indicating that a

TABLE 10
Distribution of Citations by Country of Publication

Country	*Frequency*	*%*
United States	6,567	83.08
England	662	8.38
Canada	153	1.93
Netherlands	142	1.79
Germany	89	1.13
France	64	.80
Switzerland	37	.46
Taiwan	36	.45
Mexico	22	.30
Kuwait	15	.19
Denmark	13	.16
Dominican Republic	13	.16
Australia	10	.12
India	9	.11
USSR	9	.11
Saudi Arabia	8	.10
Nigeria	6	.07
Scotland	6	.07
Sweden	5	.06
Hungary	3	.04
Ireland	3	.04
Italy	3	.04
Japan	3	.04
New Zealand	3	.04
Philippines	3	.04
Bolivia	2	.02
Chile	2	.02
China	2	.02
Ethiopia	2	.02
Finland	2	.02
Venezuela	2	.02
Argentina	1	.01
Hong Kong	1	.01
Laos	1	.01
Puerto Rico	1	.01
Singapore	1	.01
Spain	1	.01
Total	7,904	100.00

higher proportion of males than females in the field of library and information science are involved in research and publication. Females were cited at a higher rate in dissertations related to public or school libraries; males at a higher rate in academic or special library settings, and especially in information science dissertations.

TABLE 11
Distribution of Citations by Currency (Year of Publication) and Type of Dissertation

Year of Publication	Currency (years)	Library Science		Information Science		Total	
		Frequency	%	Frequency	%	Frequency	%
1994-1995	1-<2	175	2.95	58	2.88	233	2.93
1990-1993	2-5	1,485	25.05	425	21.09	1.910	24.05
1985-1989	6-10	1,748	29.49	531	26.35	2,279	28.69
1980-1984	11-15	929	15.67	413	20.50	1,342	16.90
1970-1979	16-25	926	15.62	396	19.65	1,322	16.64
1960-1969	26-35	333	5.62	105	5.21	438	5.51
1950-1959	36-45	112	11.89	38	1.89	150	1.89
Pre 1950	>45	220	3.71	49	2.43	269	3.39
Total		5,928	100.00	2,015	100.00	7,943	100.00

Although a wide range of publication formats (over 30) are cited in dissertations, it appears that scholars in the field of library and information science rely heavily on the journal article, the largest category (46%) represented in terms of format. This dependence on the journal article to support research has had a somewhat varied pattern, but on the whole appears to be slowly and steadily increasing. The proportion of journal articles to books and other formats was not higher in dissertations categorized as information science, not lending support to the claim that information science fits the scientific model to a greater extent than library science does. The popularity of certain journals is consistent in terms of overlap with lists of core journals established in prior studies, with *College & Research Libraries* and *Journal of the American Society for Information Science* heading the core list.

Library and information science is definitely an interdisciplinary field and has close relationships with the fields of education, computer science, health/medicine, psychology, communications, and business, among others. Not surprisingly the great majority of literature is published in the United States, and, therefore, the majority of citations is to literature from the United States. However, dissertation authors cite materials published outside of their country more often than do journal article authors. Over half of the publications cited are less than 10 years old; over 25% are less than five years old, indicating that it is not as current as the literature of the sciences, but more current than most social sciences in general. Neither currency or number of citations appeared to be a function of whether the dissertation was categorized as library science or information science. As with proportion of journals cited, this finding does not support the view that information science is more like a hard science than is library science. Citation analysis of the professional literature as found in doctoral dissertations in library and information science provides information about the

field itself, including comparative data about library science versus information science, as well as the information needs and sources preferred by leaders and scholars in the profession.

It is important for librarians to understand how particular user groups or scholars in a particular discipline use the library and/or information sources. In addition they need to understand some of the characteristics of research activity in the field of library and information science, such as who the scholars are that contribute to and impact the field, the extent of any collaborative research activity, and the kinds of information sources they use in or outside of the discipline. Bibliometric studies provide useful information in making collection management decisions related to choosing materials based on languages read and preferred formats of information sources used. Librarians can make journal selection and deselection decisions based on use, and they can determine whether or not to bind back issues of journal titles or assign materials to remote storage, based on the currency of sources typically used or the obsolescence of materials in a discipline. This type of research also allows librarians then to more appropriately allocate materials' budgets to purchase periodicals, books, conference proceedings, or other material formats. Analysis of citations in library and information science dissertations offers librarians new information to equip them in providing better service and bibliographic assistance to researchers and scholars in the field.

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