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Research methods in library and information science: A content analysis

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ABSTRACT

A total of 1162 research articles, published from 2001 to 2010 in three major journals of library and information science (LIS), are analyzed quantitatively and qualitatively in order to address some recurring themes about research method selection and application in the scholarly domain. This study shows that LIS scholars utilize a greater number and wider variety of research methods than before. Replacing the dominant positions that questionnaire survey and historical method previously held, content analysis, experiment, and theoretical approach have become the top choices of research methods in the field. This study also examines two recurring themes regarding research methods in the LIS field, namely, use of multiple methods in one study and adoption of the qualitative approach, but finds no conclusive evidence of increased implementation of either practice. More efforts in the form of education, training and advocacy are therefore needed to help LIS scholars gain a better understanding of research methods and make more informed decisions on research method selection and implementation in their scholarly endeavors.

1. Introduction

Research methods play a central role in scholarly endeavors in the field of library and information science (LIS), and many scholars have explored LIS research methodology. Some researchers survey types of research methods (Bernhard, 1993; Blake, 1994; Järvelin & Vakkari, 1990; Powell, 1999). Others investigate the extent to which qualitative research is conducted in comparison with quantitative methods (Eldredge, 2004; Fidel, 1993; Hider & Pymm, 2008; Zhang et al., 2012). In recent decades, several authors have paid particular attention to studies that employ mixed or multiple methods for data collection and analysis (Fidel, 2008; Lee, 2002; Ma, 2012).

All the studies underline the importance of research methods in LIS as well as the significance LIS researchers have attached to research methods in their scholarly undertakings. Any research study must develop a proper methodology that would enable the investigator to collect and analyze data to address the problem under investigation. The methodology for a single study could involve one or more individual methods (e.g., experiment, survey, or observation). Which and how many individual methods a scholar should choose for a particular study depend on the objectives of the research. Obviously, the methodology LIS researchers use is not a random aggregation of individual methods. LIS scholars need to consider which methods to use, how many different methods to use in a study, and which research approach (quantitative, qualitative, or both) to take.

2. Problem statement

The present study intends to explore research methods in LIS via a quantitative and qualitative examination of research articles published in three major journals of the field. Specifically, the following three research questions will be addressed:

1) What research methods are commonly used in the field of library and information science?
2) What other recurring themes are there in the LIS field with regard to research methods?
3) What implications do these recurring themes in research methods have for the LIS discipline?

In addition to providing an updated view of the practices and development of research methods in the field, the present study, unlike many others, considers LIS research concerns in terms of research methodology design and implementation. Library and information science has been evolving into a discipline in which the variety of research methods and approaches has been expanding. This is largely due to the past contributions and present efforts of its numerous scholars. A close examination of the *status quo* of LIS research and related recurring themes would help LIS scholars stay informed of topics related to research methods and subsequently make more learned decisions about method selection and implementation in their research.

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3. Literature review

3.1. Surveys of research methods used in LIS

Bernhard (1993) performed a review of research articles as found in five kinds of studies: 1) content analyses of core journals, 2) content analyses of specific journals, 3) reviews of doctoral theses, 4) analyses of secondary journals, and 5) analyses of other sources. In conjunction with 11 textbooks on research methods in LIS and two reference sources (Soper, Osborne, & Zweizig, 1990; Young, 1983), Bernhard identified 13 research methods: bibliometrics, case study, comparative study, content analysis, Delphi method, ethnographic research, evaluative study, experimental research, historical research, information systems design, operations research, survey, and theory development.

Järvelin and Vakkari (1990) categorized 833 articles published in 1985 from 37 core LIS journals by research strategies (empirical research, conceptual research, mathematical/logical method, system & software analysis & design, and literature review) and data collection methods (e.g., questionnaire, interview, observation, thinking aloud, content analysis, citation analysis, and historical source analysis). Using the same procedure, Kumpulainen (1991) examined 632 articles from 30 core LIS journals published in 1975 and concluded that empirical research methods/strategies accounted for close to 51% of all the selected studies, with historical method (13.1%) and questionnaire and interview (combined as one category, 10.9%) rounding out the top of the list of data collection methods used in LIS. It should be noted that 47.9% of the articles included in the research were labeled as "not applicable (nonemp. study)", meaning that those articles of non-empirical studies did not use an identifiable method of data collection. Based on the taxonomy developed by Järvelin and Vakkari (1990), Hider and Pymm (2008) conducted a content analysis of articles from 20 LIS journals indexed in *Journal Citation Report* (JCR) and published in 2005. They found that survey remained the predominant empirical research strategy in both library science and information science. Meanwhile, the authors observed a marked increase in experimentation.

Blake (1994), on the other hand, analyzed LIS dissertation abstracts over a period of 15 years (1975–1989) and reported the following research methods: descriptive, case study, bibliographic, historical/biographical, survey (questionnaires, interviews), bibliometric (including citation studies), content analysis, modeling, quasi-experimental, experimental, theory, combinations, and others. In comparing LIS research methods curricula in Korean and U.S. universities, Park (2004) showed that survey/questionnaire, experiment, historical method, interview, ethnography, observation, desk research/literature review, comparative study content analysis, evaluative research, bibliometrics, case study, information system design, action research, Delphi study, focus groups, and field study were covered in those courses. Some of these (e.g., field study and focus groups) had not appeared in previous studies, possibly indicative of the changing scene of research methods in the field of library and information science.

Researchers in LIS appear to employ more sophisticated research methods and techniques (Blake, 1994; Enger, Quirk, & Steward, 1989; Park, 2004) instead of the commonly used survey (Hider & Pymm, 2008; Järvelin & Vakkari, 1990; Peritz, 1980) or dominant historical method in the past (Schlacter & Thomison, 1974, 1982). For instance, research using experiments and modeling is on the rise (Blake, 1994; Hider & Pymm, 2008). Methods such as ethnography, focus groups, and thinking aloud are covered in LIS education (Park, 2004).

3.2. Other recurring themes of research methods in LIS

As what is researched in library and information science requires the usage of quantitative and qualitative approaches, the integration of both would help enhance the quality of LIS research (Fidel, 2008). To do so more systematically might also advance new theories. "Scientific theories come not only from quantitative data, but also from qualitative study. … The more complex the problem, the more numerous are the sources of evidence needed, such as structured observations, formal case studies, and historical research" (Smith & Torrey, 1996, p. 612).

Hernon and Schwartz (2003), coeditors-in-chief of *Library & Information Science Research*, were hopeful about the use of qualitative research in LIS:

> The toolkit of methods applicable to LIS research has expanded, especially in the arena of qualitative methods. Researchers now have more choices and, more than ever, have clear alternatives to the use of survey research. … The application of methods drawn from other disciplines is relevant and is becoming increasingly frequent in LIS research. Further uses of these methods will become evident as the range of problems that LIS researchers investigate expands. (p. 1)

There has been a modest increase in the past several decades in the use of qualitative approaches, excluding historical research which showed a noticeable decline (Hider & Pymm, 2008). Fidel (1993) demonstrated, through a review of qualitative research methods used in information retrieval (IR), that the number of IR research projects applying qualitative methods was on the rise. In an examination of articles from three Chinese and 10 non-Chinese core LIS journals published during 2001–2010, Zhang et al. (2012) echoed the findings of Hider and Pymm (2008). However, Zhang et al. defined qualitative research as any publication that contained no use of statistics, and so this included discussion or opinion pieces that are not examples of research at all.

Another topic of concern regarding research methods in LIS is the use of multiple or mixed methods. Järvelin and Vakkari (1990) recorded studies that had several methods for data collection in their research while Fidel (2008) scrutinized 465 articles published in 2005–2006 in four LIS journals (*Information Processing & Management, Journal of Documentation, Journal of the American Society for Information Science & Technology,* and *Library & Information Science Research*) to find out the degree to which mixed methods were used. Among all the studies Fidel inspected, only 5% employed mixed methods. She distinguished between mixed methods, "multiple methods" (17%), and "two approaches" (qualitative and quantitative; 8%). Multiple methods articles used one approach for data analysis while articles characterized as two approaches failed to mix the quantitative and qualitative approaches throughout. The taxonomy Fidel (2008) developed, however, led the author herself to admit that "identifying the 22 articles (of mixed methods) was sometimes complicated" (p. 270).

Taking a philosophical stance, Ma (2012) elaborated on the need for combining quantitative and qualitative approaches to research in library and information science because information is known for its simultaneously objective, subjective, and normative–evaluative nature. Generally speaking, qualitative research is associated with hermeneutics, constructivism, and relativism, whereas quantitative research is related to positivism and empiricism. Although Ma does not give a definition for mixed methods, she suggests that "mixed methods research that combines large-scale data analyses and a detailed description of community practice may provide us with a richer understanding of information and information-related phenomena" (p. 1866).

4. Data collection and analysis

Research articles published between 2001 and 2010 were obtained from *Journal of Documentation* (JDoc), *Journal of the American Society for Information Science & Technology*[1] (JASIS&T), and *Library & Information Science Research* (LISR). Editorials, literature reviews, book reviews, letters to the editor, and any other non-research articles were excluded. The three journals were chosen as data sources for this study because

[1] ASIS&T changed its full name from American Society for Information Science & Technology to Association for Information Science & Technology in 2012.

Table 1
Profile summary of JDoc, JASIS&T, & LISR.

Profile feature	JDoc	JASIS&T	LISR
Focus	Theories, concepts, models, frameworks, and philosophies in the information sciences	The production, discovery, recording, storage, representation, retrieval, presentation, manipulation, dissemination, use, and evaluation of information and on the tools and techniques associated with these processes	The research process in library and information science as well as research findings and, where applicable, their practical applications and significance
Publisher location	UK	USA	USA
Size	Bi-monthly, 5–7 articles/issue	2001–08: 14 issues/year, 5–18 articles/issue; 2009–10: 12 issues/year, 15–16 articles/issue	Quarterly, 2001–03: 4–6 articles/issue; 2004–10: 6–8 articles/issue
Impact factor (2012)	1.138	2.081	1.755
Indexed in…A&I products	Over 30	Close to 50	Over 20
Editor-in-chief	David Bawden	Donald Kraft (2001–08), Blaise Cronin (2009)	Peter Hernon & Candy Schwartz

they have also been selected by previous studies on research methods (Fidel, 2008; Järvelin & Vakkari, 1990), and all three are core journals in library and information science research (Table 1).

The data collection yielded 1162 research articles from the three journals chosen (Table 2). Due to an unanticipated time constraint, only articles from JASIS&T in 2001–2002 and 2009–2010 were included in the data analysis and reported below. Data for the remaining six years (i.e., 2003–2008) of JASIS&T were gathered after the current research concluded and will be reported in another study subsequent to the present one.

A coding schema of research methods used in LIS was developed (Table 3) by two coders based on analysis of all the research articles in JDoc and LISR. It was further refined while coding research methods reported in the JASIS&T articles in the two time periods (i.e., 2001–02 & 2009–10). Coding results by the two coders for a randomly selected sample of 30 articles, 10 from each of the three journals, were compared for consistency. The intercoder agreement rate between the two coders was 86.7%, exceeding the acceptable rate of 80% (Neuendorf, 2002, p. 143). This intercoder agreement rate also indicates that both the coding schema and coding process are reliable. For the cases of disagreement, the two coders discussed the cases and reached a consensus. It should be noted that the research methods listed in this coding schema were named primarily after data collection techniques, for example, questionnaire or interview. This naming convention appeared to be logical as well as informative. The current study did not consider research paradigms (e.g., naturalism, phenomenology, and positivism) when naming research methods, as research paradigms are more at the conceptual level than directly linked to any specific data collection methods.

If one study used more than one method, each method was recorded in the order in which it was reported in the article. If a study adopted a true experimental design in the form of experimental vs. control groups with a pre-test, treatment, and post-test, it usually would employ at least one other research method (e.g., questionnaire or interview) for performing the pre-test and post-test. That study would then be coded once as experiment and also for other research method according to what was actually used for data collection. In contrast, research using quasi- or pre-experiments was simply coded in this study as experiment. No weights were assigned to any of the multiple methods applied in a single study, as this would add an element of subjectivity. The collected data were then analyzed quantitatively and qualitatively.

Table 2
Frequency distribution of research articles by journal.

Year	JDoc	JASIS&T	LISR
2001–2010	367	1250+ (estimated)	241
2001–2002	58	205	33
2009–2010	82	349	54

5. Findings

5.1. Research methods used in LIS

The top five research methods used in all three journals are listed in Table 4. It must be pointed out that the percentage total in each column of Table 4 would exceed 100 if all methods other than the top five were also included in the computation, since each method in any multiple-method studies was counted once in the tally. For example, a study using questionnaire, interview, and observation as research methods received three individual counts of one.

Out of the top five research methods identified, the three journals shared four, with an accumulative percentage of 65 (theoretical approach), 57 (content analysis), 55.8 (questionnaire) and 53.4 (experiment) respectively. Theoretical approach tops the list in the case of JDoc, experiment leads in JASIS&T, and content analysis prevails in LISR. The only two research methods that did not make the list of the common four in Table 4 are interview (in JDoc & LISR) and bibliometrics (in JASIS&T). Unlike earlier findings (Hider & Pymm, 2008; Järvelin & Vakkari, 1990), questionnaire survey and historical method no longer dominate LIS research as leading methods across the three journals examined in this study.

Table 5 shows both the frequency and corresponding order in which a particular method is reported in the data set. For example, for JDoc, content analysis was chosen as a research method in a total of 52 studies, of which 37 listed content analysis as the first (or only) research

Table 3
Coding schema for research methods.

Bibliometrics (including citation analysis, informetrics, & scientometrics)
Content analysis (including discourse analysis)
Delphi study
Ethnography/field study
Experiment
Focus groups
Historical method
Interview
Observation
Questionnaire
Research diary/Journal
Theoretical approach (e.g., conceptual analysis, modelling, theory building)
Think aloud protocol
Transaction log analysis
Webometrics (Including link analysis, cybermetrics, altmetrics)
Other methods (e.g., action research, card sorting, information horizon)

Table 4
Top five research methods used in all three journals.

JDoc (n = 367)		JASIS&T (n = 554)		LISR (n = 241)	
Method	%	Method	%	Method	%
Theoretical approach	38	Experiment	31	Content analysis	30
Content analysis	14	Bibliometrics	23	Questionnaire	28
Questionnaire	13.8	Questionnaire	14	Interview	20
Experiment	13.4	Content analysis	13	Theoretical approach	15
Interview	13.4	Theoretical approach	12	Experiment	9

method, 14 as the second, zero as the third (merely as a position holder when no study adopts content analysis as a third research method in a multiple-method investigation) and one as the fourth. This is entered as 37 + 14 + 0 + 1 after the total frequency in Table 5.

Compared with the other two journals, JDoc published an exceptionally high percentage of articles (38%) in the category of theoretical approach (e.g., conceptual analysis, model building, theory development). In other words, 38% of 367 articles employed conceptual or theoretical research methods. JDoc's slant toward theoretical research methods may suggest, since most of the authors are European, that there is a stronger emphasis among European LIS scholars on theoretical topics while, by contrast, researchers from North America appear to focus mainly on applied research using empirical methods.

Although only four years (2001–02 & 2009–10) of JASIS&T data were collected in this study due to the time constraint, the greatest number of articles studied came from this journal. As shown in Table 5, experiment is the most frequent among all the individual methods reported in the 554 JASIS&T articles. This result is influenced by the fact that many of the articles in JASIS&T reported new procedures (e.g., key-phrase extraction), algorithms (e.g., search result ranking), or systems (e.g., digital libraries) and consequently carried out experiments to evaluate these initiatives. "Experiment" in JASIS&T mainly refers to the testing performed on a newly developed procedure, algorithm, or system, which differs from the experimental designs Campbell and Stanley (1966) depicted in their seminal book. In information science, experiments rarely take the classic design of experimental vs. control groups with pre-test, treatment, and post-test. Rather, experiments are normally performed on the target in a laboratory or simulated environment with one or more of the experiment essentials (e.g., experimental group, control group, pre-test) and thus fall under the quasi- or pre-experiment category. In future studies, experiment as a research method should be further broken down into classic design and the more typical type of implementation in information science.

Bibliometrics constitutes the second most used research method in JASIS&T articles, while it does not appear in the top five lists for either JDoc or LISR (Table 4). In this study, bibliometrics includes citation analysis and is also treated as a synonym for informetrics and scientometrics. A closer analysis of JASIS&T data reveals that the percentage of articles using bibliometrics increased from 17% in 2001–02 to 26% in 2009–10 while JDoc witnessed a decrease (from 8.6% to 3.6%) of bibliometric studies in the same two periods of time. Blaise Cronin, who assumed the editorship of JASIS&T in 2009 and has been a seasoned bibliometrician, perhaps promotes the growth of bibliometric studies in JASIS&T publications. In comparison, the top method in JDoc (theoretical approach) and that in LISR (content analysis) are both ranked as the fourth and fifth in JASIS&T. This result indicates the empirical nature of the research JASIS&T publishes.

Content analysis, as a research method, features systematic and objective analysis of text data. The unit of analysis in this method usually consists of passages (e.g., words, sentences, and paragraphs) while its analytic techniques are mainly qualitative (e.g., open coding), supplemented by some quantitative procedures (e.g., frequency and percentage). Unlike many other methods, content analysis was not regarded by LIS researchers as a popular research method until recent years, but has now become the most often-used research method by LISR authors (Table 5). The two survey methods (questionnaire and interview), widely applied in the past in LIS research, were only ranked as the second and third choices among all methods reported for LISR. In LISR it is worth noting that three of the four research methods (Delphi study, ethnography, and research diary) tied with a usage frequency of two each are all methods which have emerged in the LIS field in the recent past.

Overall, the leading methods LIS researchers used include experiment, content analysis, and theoretical approaches, replacing questionnaire survey and historical research as the top choices in LIS research of previous decades. In addition, research methods not only increased in number (i.e., more than 15 altogether) but also in variety, adding for example ethnography, think aloud protocol, and transaction log analysis.

5.2. Other recurring themes in research methods of the LIS field

There are other recurring themes in research methods of the field besides the adoption of a greater number and variety of methods. One

Table 5
Research method distribution.

JDoc (N = 367)		JASIS&T (N = 554)		LISR (N = 241)	
Method	Frequency (1st + 2nd + …)	Method	Frequency (1st + 2nd + …)	Method	Frequency (1st + 2nd + …)
Theoretical approach	141 (133 + 8)	Experiment	174 (154 + 11 + 8 + 1)	Content analysis	73 (61 + 10 + 1 + 0 + 1)
Content analysis	52 (37 + 14 + 0 + 1)	Bibliometrics	125 (121 + 4)	Questionnaire	68 (64 + 3 + 1)
Questionnaire	51 (38 + 10 + 3)	Questionnaire	78 (55 + 17 + 2 + 4)	Interview	48 (26 + 16 + 4 + 2)
Experiment	49 (45 + 2 + 2)	Content analysis	72 (64 + 6 + 0 + 2)	Theoretical approach	36
Interview	49 (35 + 9 + 5)	Theoretical approach	67 (63 + 4)	Experiment	21 (14 + 4 + 3)
Bibliometrics	31 (29 + 2)	Interview	48 (19 + 20 + 7 + 2)	Observation	15 (6 + 6 + 3)
Transaction log analysis	18 (14 + 2 + 2)	Transaction log analysis	28 (20 + 3 + 3 + 2)	Bibliometrics	14 (13 + 1)
Observation	11 (6 + 4 + 1)	Observation	18 (6 + 6 + 5 + 1)	Focus groups	9 (5 + 3 + 0 + 1)
Webometrics	9 (8 + 1)	Webometrics	15	Transaction log analysis	9 (8 + 1)
Historical method	7 (6 + 1)	Think aloud protocol	13 (2 + 4 + 6 + 1)	Webometrics	6
Focus groups	6 (4 + 2)	Focus groups	12 (4 + 3 + 2 + 3)	Think aloud protocol	3 (0 + 1 + 2)
Research diary	5 (1 + 3 + 0 + 1)	Research diary	6 (4 + 2)	Delphi study	2 (1 + 0 + 0 + 1)
Think aloud protocol	5 (0 + 4 + 1)	Historical method	5	Ethnography	2
Ethnography	3	Delphi study	1	Historical method	2
				Research diary	2 (0 + 2)

Table 6
Number of research methods.

Number of methods	JDoc (%)		JASIS&T (%)		LISR (%)	
	2001–02	2009–10	2001–02	2009–10	2001–02	2009–10
One	83	77	76	87	79	82
Two	10	20	16	9	16	13
Three	5	3	6	2	3	3
Four	2	0	2	1.7	2	2
Five			0	0.3		

is the use of multiple research methods in individual studies and the other is the amount of qualitative research as compared with quantitative studies.

Two sets of data were extracted from what this study already collected, one covering the time span of 2001–02 and the other for 2009–10. As before, each method is counted once as it appeared in the publication. There appears to have been no increase in studies that used more than one research method except in the case of JDoc (Table 6). To the contrary, a decrease is observed in JASIS&T (−11%) and LISR (−3%). This result is somewhat unexpected because many researchers (e.g., Fidel, 2008; Ma, 2012) have advocated or promoted the use of multiple methods in LIS research. One possible explanation for this outcome is the short time span this study examines. That is, six years between 2001–02 and 2009–10 are too short to allow any noticeable change to take place regarding the use of multiple methods.

Growth in qualitative research was also examined. Data collection techniques (e.g., questionnaire, interview) alone cannot indicate whether a study is quantitative or qualitative. Most, if not all, data collection techniques can be used to gather both kinds of data, although they are usually more suitable for one approach over the other. For example, questionnaire is one of the most common techniques for collecting quantitative data, but can also be used for gathering qualitative data via open-ended questions. An interview, likewise, can be used for collecting quantitative data with the help of factual questions even though it is ordinarily employed for gathering qualitative data. Similarly, quantitative data can be analyzed qualitatively in certain cases (e.g., exploring the implication of quantitative results) whereas descriptive statistics (e.g., frequency and percentage) are sometimes computed with qualitative data in order to gain a quick overview. In essence, no research method is completely quantitative or qualitative although each method by nature is oriented toward one of the two.

Of the three sets of top five research methods used in each of the three journals (Table 4), content analysis, interview, and theoretical approach are more likely to be used in qualitative approaches, while bibliometrics and questionnaire generally indicate quantitative analysis. Experiment, the remaining research method under consideration, can go in either direction on the quantitative and qualitative spectrum. Whether an experimental study is qualitative or quantitative ultimately depends on the techniques it employs for data collection. For example, if an evaluation of an information retrieval system relies on questionnaires and test searches for data collection, it would most likely be quantitative. A study of information seeking behavior, on the other hand, would probably be mainly qualitative if it adopts the think aloud protocol. Experiment therefore is not included in this analysis (Table 7), which categorizes the articles by research approach (quantitative or qualitative) and the top research methods (bibliometrics, content analysis, interview, questionnaire, and theoretical approach) along with corresponding percentages for the two time periods of 2001–02 and 2009–10.

There was a very slight increase of qualitative research in JDoc (i.e., +5.3%) and LISR (i.e., +2%) from 2001–02 to 2009–10, while the percentage of qualitative studies in JASIS&T decreased by four during the same two periods of time. There is no evidence, then, that more studies took the qualitative approach in 2009–10 than that in 2001–02. It is perhaps surprising that there has not been an increase in the use of qualitative research in LIS, especially considering that efforts have been made to encourage and promote qualitative studies (Fidel, 1993; Hernon & Schwartz, 2003). As with multiple methods, it is possible that changes take longer to occur than in the time span under observation. Moreover, only the top five methods (excluding experiment) in the three journals are considered in Table 7; inclusion of additional methods might show a different pattern.

6. Discussion

6.1. Implications

The LIS field is maturing in terms of research method selection and application in that a greater number and wider variety of research methods are used in all the research publications this study examines. All the methods reported in the 1162 scholarly publications in a sense constitute a toolbox of research methods. Scholars are no longer limited to the research methods traditionally applied in LIS explorations (e.g., questionnaire and historical method). Researchers can instead choose research methods from this expanded toolbox according to their study objectives.

Each research method has its advantages and limitations regardless of how long or how widely it has been used in the LIS domain. If more than one method is used in a single study, the methods can complement one another and integrated together they may address any limitations of a single method. Since there has not been an observable increase in adoption of multiple research methods, perhaps more efforts in the form of education, training, and advocacy are needed to promote the use of multiple methods. Likewise a lack of growth in the use of qualitative research suggests that efforts should be made to increase awareness of qualitative methods and their application to LIS research problems. The current study is a first step in what will be a further effort to help LIS researchers gain a better understanding of research methods and subsequently to make more informed decisions about research method selection and implementation.

6.2. Limitations

Only three LIS journals are included in this research, which undoubtedly affects the representativeness of the field. Data from additional LIS

Table 7
Categorization of studies by research approach and method.

Research approach • Method	JDoc (%)		JASIS&T (%)		LISR (%)	
	2001–02	2009–10	2001–02	2009–10	2001–02	2009–10
Quantitative	17.2	17	32	40	21	36.7
• Bibliometrics	8.6	3.6	17	26	3	3.7
• Questionnaire	8.6	13.4	15	14	18	33
Qualitative	56.6	61.9	37	33	42	44
• Content analysis	12	14.6	5	18	24	28
• Interview	8.6	7.3	11	8	18	7
• Theoretical approach	36	40	21	7	0	9

journals might yield a different story, though would really be more likely to confirm the findings. The lack of a complete dataset for JASIS&T might also have affected the findings in some areas.

7. Conclusion

The current study not only provides an updated view of research method applications in the field, it also considers the recurring themes in LIS research regarding the use of multiple methods and adoption of the qualitative approach. The findings of this investigation should help LIS scholars stay informed about topics related to research methods and enable them to make more informed decisions about method selection and implementation in their research. While it is the research problem that determines what and how many methods should be used as well as what approach (quantitative, qualitative, or both) should be taken, scholars are also limited by their own knowledge and experience. Unfamiliar methods and approaches are unlikely to be used, even when they might have been the best choice for the situation. This close look at the range of methods used in LIS research, and some surprising gaps, can serve as a stimulus and a guide for scholars, writers of textbooks, and those who teach research methods in LIS educational programs.

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