Library & Information Science Research 38 (2016) 94–100

Contents lists available at ScienceDirect

Library & Information Science Research

How reference and information service is studied: Research approaches and methods

Amy VanScoy [a,*], Cady Fontana [b]

[a] University at Buffalo, 546 Baldy Hall, Buffalo, NY 14260, United States
[b] Edith B. Ford Memorial Library, 7169 N Main Street, Ovid, NY 14521, United States

ARTICLE INFO

Article history:
Received 27 February 2015
Received in revised form 14 September 2015
Accepted 8 April 2016
Available online 8 May 2016

ABSTRACT

There is a need for a robust research base for reference and information service (RIS), both for scholarship in the field and for effective decision-making in practice. While a number of studies have been conducted about the research of library and information science (LIS) in general, no analysis has been conducted on RIS research. Focusing specifically on research approach and methods, this study analyzes the journal literature for the decade 2000 to 2009. Of the 24% of papers that were research studies, most were quantitative descriptions of data. Qualitative approaches were rarely used. The results suggest that RIS is being studied from a limited perspective and could benefit from a greater diversity of approaches and methods.

1. Introduction

Despite the importance of reference and information service (RIS) as a fundamental area of library and information science (LIS), little is known about the characteristics of the literature in this subfield. The LIS literature overall has been characterized in many ways by studies examining the amount of empirical research published and the research methods used, as well as other characteristics. However, only three studies have specifically examined the RIS literature: a content analysis of the RIS literature from the mid-1950s to the mid-1960s by Wynar (1967), a recent analysis of the articles published in *Reference Services Review* by Mahraj (2012), and a selective review of the research methods used to study the reference transaction by Richardson (2002). To characterize the literature of RIS, a current and more comprehensive study is needed. The current study focuses specifically on the quantity of research produced and on research methods used.

This study is based on two key assumptions. First is the assumption that empirical research is important for any subfield. Second is the assumption that a variety of research approaches and methods creates a stronger body of research. To develop a body of research with only in-depth, exploratory studies or only large-scale studies with generalizable results would be to leave some possible research questions unanswered.

With these assumptions in mind, the authors questioned whether the RIS literature included a strong and varied research base. In 1967, Wynar found that "most of the articles … were repetitive of 'how we do it in our library' or simply were news reports of how the library dealt with a specific problem, with no attempts at any kind of generalization" (pp. 341). Would the same be true decades later? In his analysis of research on the reference transaction, Richardson found a "move from merely descriptive studies to those studies with more theoretical approaches and a clearly increasing methodological sophistication, usually quantitative" (2002, pp. 223). Would the same patterns of research methods be found in the broader RIS literature? This study was designed to further this earlier research with more current and comprehensive results.

2. Problem statement

RIS is a key domain of LIS and should be supported by a robust research base. To continue to extend knowledge about RIS, scholars need a strong and diverse base of research on which to build. Such a research base should include both breadth and depth of content, as well as a variety of research methods. In addition, RIS practitioners need research evidence for informed decision-making. Although reports of successful services may be useful, research studies provide stronger evidence upon which to base service decisions. It is unclear whether RIS currently has this robust research base and whether there are deficiencies in the research base that need to be remedied. This study aims to respond to this gap in knowledge by addressing the following research questions:

- How much of the literature on reference and information services is empirical research? How does this compare with LIS literature overall?
- What types of research approaches and methods are used in reference and information service research?

* Corresponding author.
E-mail address: vanscoy@buffalo.edu (A. VanScoy).

http://dx.doi.org/10.1016/j.lisr.2016.04.002
0740-8188/

Answering these questions will provide a starting point for evaluating the research of RIS and identifying deficiencies in the research in terms of approach and method.

3. Literature review

3.1. Analyses of the RIS literature

Although no comprehensive study of the RIS research literature has been conducted, two studies have used content analysis to explore RIS literature. Wynar (1967) analyzed 227 RIS-related journal articles. The aim of the analysis was to investigate development of reference theory, rather than the methods used. Only two of the articles in his dataset were described as "theoretical" articles, the largest categories of articles being "practical" and "how we do it" types (pp. 341). Mahraj (2012) studied articles published in *Reference Services Review* from 2006 through 2011. Research methods were not studied, but article type, as categorized by the journal, was reported: 40% were research papers, 31% were case studies, 13% were general or literature reviews, 6% were conceptual papers, 5% were viewpoints, and 1% was not assigned a category.

As previously mentioned, Richardson focused specifically on research methods in his review of research on the reference transaction. Richardson observed that the research on reference transactions progressed from mainly descriptive studies to linear modeling and more sophisticated statistical work in the last decade studied.

3.2. Content analysis of the LIS literature

There have been numerous content analyses of the broader LIS literature. In addition to those detailed in the sections below, some foundational analyses of the general LIS literature include Allen and Reser (1990), Buttlar (1991), Enger, Quirk, and Stewart (1989), Feehan, Gragg, Havener, and Kester (1987), Järvelin and Vakkari (1990, 1993), Kumpulainen (1991), Nour (1985), and Peritz (1980). These studies use content analysis to determine the amount of research, types of research methods used, author affiliation, use of theory, funding sources, and other variables. The authors use various strategies for collecting and for analyzing their data, so comparing the results is challenging. However, given the number of studies over several decades, some trends can be seen and used as a basis for comparison.

Content analyses of the LIS literature use two major approaches. The more common approach, which will be referred to here as the specific-journal approach, uses as a basis for analysis articles published in a group of top journals, such as those with a high impact factor (for example, Hider & Pymm, 2008), or in a single journal or small group of journals, such as:

- *Bulletin of the Medical Library Association* (Dimitroff, 1992; Gore, Nordberg, Palmer, & Piorun, 2009);
- *College & Research Libraries* (Cline, 1982; Kim & Kim, 1979);
- *College & Research Libraries* and *Journal of Academic Librarianship* (Bao, 2000; Crawford, 1999);
- *Journal of Documentation*, *Journal of the Association for Information Science & Technology*, and *Library & Information Science Research* (Chu, 2015);
- *Journal of the American Society of Information Science* (Harter & Hooten, 1992; Houser, 1988; Koehler, 2001); and
- *School Library Media Quarterly* (Callison, 1997).

The other approach, which will be referred to as the topical approach, considers articles published on a particular topic, regardless of journal. Focuses of content analyses using a topical approach include:

- children's needs and services (Naylor, 1987);
- information needs and uses (Julien, 1996; Julien & Duggan, 2000; Julien, Pecoskie, & Reed, 2011);
- instructional services in libraries (Crawford & Feldt, 2007; Zachert, 1987);
- public librarianship (Goodall, 1996; Hersberger & Demas, 2001);
- school librarianship (Clyde, 2004);
- special librarianship (Dimitroff, 1995); and
- technical services (Gelber, 2013).

Despite the variety of areas covered by topical content analyses, an obvious gap is a contemporary study of the literature of RIS.

Although no recent studies have taken a topical approach to analyzing the RIS literature, two of the specific journal studies used domain as a variable, including RIS. Koufogiannakis, Slater, and Crumley (2004) studied top journals from the year 2001 and included RIS as a domain. Blessinger and Frasier studied top journals from 1994 to 2004 and included RIS as a "top subject area" (2007, pp. 162).

3.3. Amount of research

Some of the content analyses of the LIS literature report the percentage of articles published that are empirical research studies. These analyses report a wide range in the proportion of research studies to other types of articles. This wide range is due to a number of factors, including years studied, operational definition of research, and approach taken (specific-journals or topical). Koufogiannakis et al. (2004) compared findings of content analyses over the years and found that, in the studies reviewed, the proportion of research articles ranged from 15% to 57%. Their study of the 2001 literature found a 30.3% research rate ($N = 807$), which may be the best point of comparison due to the year of the study. Julien et al. (2011) found a 70.6% research rate for the information needs and uses literature ($N = 528$), indicating that content analyses on particular topics may show different proportions of empirical research than studies looking at LIS as a whole.

Mahraj's (2012) study of *Reference Services Review* reported that 40% of articles in the journal were assigned the article type "research papers" (pp. 189). Koufogiannakis et al. (2004) coded the LIS literature by domain and found a surprising lack of research in the reference domain: of the 807 research articles published in all domains in 2001, only 77 were categorized as reference (pp. 232). Their study does not examine the amount of RIS research compared to the number of RIS publications overall. Blessinger and Frasier (2007) studied articles published in top journals from 1994 to 2004 and found 2001 to be the peak year for RIS articles. Their study is of limited use in understanding RIS research because it does not separate research studies from other types of articles.

3.4. Research methods

LIS tends to be dominated by a quantitative approach to research (see, for example, Crawford, 1999, pp. 227; Hider & Pymm, 2008, pp. 112; Kumpulainen, 1991, pp. 67). Only Gelber's (2013) study of the technical services research (for the years 2007–2011) found a contradictory result. Gelber's study found that 54.7% of the research articles were qualitative, 27.3% were quantitative, and 18% were mixed methods ($N = 256$, pp. 178). Gelber's finding may be due to the focus on technical service literature, or it could be due to methodological issues. Gelber's study found an unusually high number of case studies, an issue that is addressed below.

As previously mentioned, a wide variety of categories for research methods are used, which makes direct comparison of results across studies challenging. There are some trends, however, that stand out, regardless of the exact categories used. The LIS research is dominated by descriptive methods, and in particular survey methods. Nearly every content analysis reports this finding (Hider & Pymm, 2008, pp. 111; Järvelin & Vakkari, 1990, pp. 408; Julien et al., 2011, pp. 21; Koufogiannakis et al., 2004, pp. 232).

Koufogiannakis et al. (2004) examination of the reference domain found that 54 of the 77 research studies were descriptive (pp. 234). Blessinger and Frasier (2007) found that the RIS studies were primarily surveys and reports of usage data. Another study with relevant findings is Matteson, Salamon, and Brewster's (2011) systematic analysis of chat reference services. Although not a content analysis, the study does report methods used to study chat reference in the years 1995 to 2010, noting content analysis of chat transactions and survey methods to be predominant. The only study with contradictory findings is Gelber (2013), who found that the most frequent method used in the technical service literature was the case study at 61% ($N = 158$). This unusual finding is not thoroughly discussed in Gelber's paper.

4. Method

This content analysis study used the topical approach rather than the specific-journal approach, since the aim was to characterize RIS research rather than the research of particular journals. In addition, Koufogiannakis et al. (2004) found that much of the RIS research in 2001 was not published in reference-specific journals suggested that it would be necessary to search broadly across many journals to adequately collect the RIS research.

The dataset consisted of 1362 articles published between 2000 and 2009 in peer-reviewed English-language journals. During the literature review phase of this study, the authors found it challenging to compare findings since studies covered such random periods of time, from a single year, such as 2001 (Koufogiannakis et al., 2004) to a span of years, such as 1990 to 1994 (Julien, 1996). To facilitate future studies and comparison of data, the authors decided to choose a decade that spanned a logical and replicable number of years. The decade 2000 to 2009 was chosen as the most recent decade for which articles would be indexed. In addition, this decade includes the years in which digital reference services proliferated, thus making it interesting to examine.

The data were retrieved from two LIS databases using the appropriate descriptors as indicated by the thesaurus for each database: "reference services" in *Library Literature and Information Science* and "reference work" in *Library and Information Science Abstracts*. Database documentation indicated that these terms included more specific subtopics, such as digital reference services. Duplicates were removed from the dataset, as well as editorials, book reviews, article reviews, tables of contents, and indexes. This data collection method introduces a limitation in its exclusion of non-article publications from the dataset. Key research in RIS may be disseminated as book chapters, proceedings, or presentations that are not indexed by the LIS databases used to collect the data. In addition, this method relies on the RIS research articles being correctly assigned the relevant descriptor in the databases.

Articles in the dataset were first coded to separate the research articles from those that were not research. Categories developed for the study of the information needs and uses literature (Julien, 1996; Julien & Duggan, 2000; Julien et al., 2011) were used for coding the research in this study:

- commentary (opinion, no research);
- report of service (describing activities in information services); and
- research study (reporting systematic collection of data for a particular purpose) (Julien et al., 2011, pp. 20)

These categories were used because they were well defined and would allow for comparison between these earlier studies and the current study.

Both authors coded a subset of 99 articles. The inter-rater reliability between the authors was 92.93%. The discrepancies in coding were between the categories "commentary" and "report of service," rather than between these two categories and "research study." There were no disagreements between the coders about which articles should be coded as "research study." After the subset of 99 articles was coded for inter-rater reliability, the remaining articles were divided between the two authors and coded.

The articles that were coded as "research study" were then further coded according to research approach (qualitative, quantitative or mixed methods) and research method, using categories developed for the study (see Table 1). The authors initially attempted to use existing categories from other studies to allow for comparison across studies. However, the authors ultimately found these categories unusable due to concerns about conflation of research design, data collection, and data analysis methods; ill-defined categories; or extremely broad "other" categories. A new coding scheme was developed for the study that first focused on research approach and then on research designs within each approach. Once qualitative studies were identified, they were further coded into subcategories for specific qualitative methods, as listed in Table 1, if applicable. Similarly, once quantitative studies were identified, they were further coded into subcategories for specific quantitative research design. Because questionnaires were identified in the literature as a significant proportion of research studies, the descriptive category was further coded to identify the subcategory of questionnaire as a data collection method. Once mixed methods studies were identified, these studies were further coded to identify evaluative studies. During the coding process, the authors noted that many mixed methods studies were designed to evaluate new digital reference services, so it seemed that distinguishing mixed methods studies designed to evaluate services from those with other aims would be informative. There may have been evaluative studies in the qualitative and quantitative categories as well, but these were not identified separately.

Once the final categories were developed, a subset of the research studies was coded according to the categories in Table 1 and differences were discussed. A set of 100 research studies was then coded by each coder, with an inter-rater reliability figure of 91%. The remaining articles were divided between the two authors and coded.

5. Results

Of the 1362 articles concerning RIS, 321 of them were research studies. Thus, 23.57% were research studies, as opposed to commentaries (54.92%) or reports of service (21.51%) (Fig. 1).

The number of research articles per year varied from 23 to 40 (Fig. 2). There were significantly more articles published per year from 2004 onward than in the years 2000–2003 ($p < .001$).

Most of the research studies took a quantitative approach (67.6%). Studies with a qualitative approach represented only 12.15% of the research, while mixed methods studies represented 20.25% (Fig. 3).

The proportion of qualitative, quantitative, and mixed methods studies varied by year (Fig. 4). Qualitative studies ranged from a low of 2.78% of the total studies in 2009 to a high of 20% of the total studies in 2005. Quantitative studies ranged from 56.65% in 2005 to 83.33% in 2009, and mixed methods studies from 13.89% in 2009 to 30.43% in 2003.

Table 1
Categories of research approaches and methods.

Categories	Subcategories
Qualitative	General qualitative
	Case study
	Ethnography
	Grounded theory
	Narrative analysis
	Phenomenology
Quantitative	Experiment
	Quasi-experiment
	Descriptive studies
	Descriptive studies — questionnaires
	Other quantitative methods
Mixed methods	General mixed methods (non-evaluative)
	Evaluation studies using mixed methods

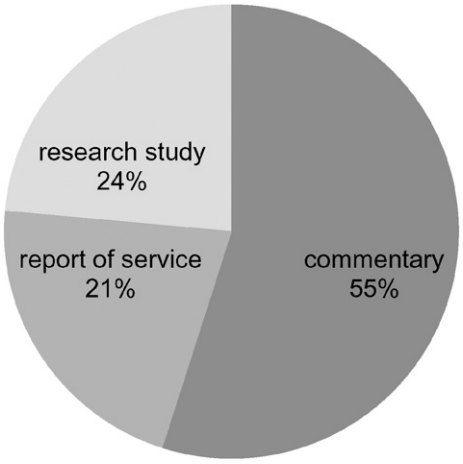

Fig. 1. RIS article distribution.

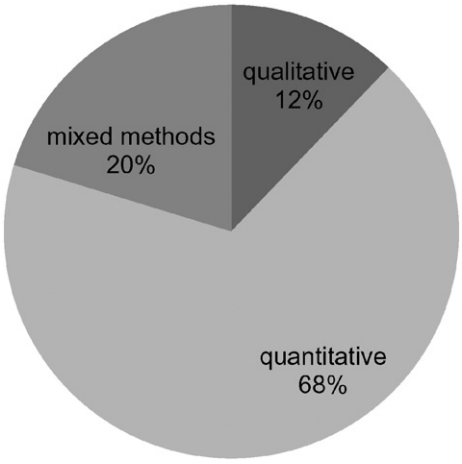

Fig. 3. Research approaches.

Subcategorizing the qualitative studies by approach resulted in only small numbers for specific qualitative approaches, such as grounded theory or ethnography. Most of the qualitative studies (79.49%) used a general qualitative approach. In these studies, the authors used data collection and analysis procedures consistent with qualitative research (such as interviews and thematic analysis), but they did not specify a particular approach. (Fig. 5)

Most of the quantitative studies (56.68%) used descriptive methods other than questionnaires, such as usage statistics (Fig. 6). Descriptive studies that used questionnaires as the data collection method comprised 38.25% of the quantitative studies. Experimental and quasi-experimental studies comprised 2.76% of the quantitative studies.

Of the mixed methods studies, 56.92% were evaluation studies (Fig. 7). These studies used both quantitative and qualitative methods to evaluate a service or an intervention. The most common types of methods in these evaluative studies were usage data, user surveys, and interviews with staff.

6. Discussion

In comparison with the LIS research overall, research studies constitute a smaller percentage of the RIS literature. This studyfound that 23.57% of the RIS articles published are research studies and are lower than Koufogiannakis et al.'s finding of 30.3% (2004) and lower than Mahraj's (2012) result that 40% of articles in *Reference Services Review* were research papers. This finding is much lower than the study of the information needs and uses literature for a similar time period (Julien et al., 2011), which found 70.6% of the articles to be research. The differences in these findings highlight the challenge of comparing results across studies. Mahraj (2012) took a specific journal approach, as opposed to the topical approach used in the current study. In addition, Mahraj's findings were based on the journal's categorization of articles as research papers rather than on an examination of each paper. Subject area and methodological choices create challenges in interpreting results.

Although the amount of research in the RIS literature is not dramatically lower than that of the LIS literature overall, RIS literature could be improved with a greater proportion of empirical research studies, as opposed to commentary or reports of service. In addition, the context for the study is the decade 2000 to 2009, which coincides with the beginning of the digital reference movement. This movement is likely to have been responsible for an increase in the percentage of reports of service, but also for an increase in the percentage of evaluative research studies.

Another finding that is perhaps related to the peculiarities of this decade is the significant increase in research studies published in the latter half of the decade. It may be that the ready availability of data resulting from digital reference services inspired faculty and librarians to produce and publish more research. However, this finding could also represent a general trend over the decade as reported by Chu's

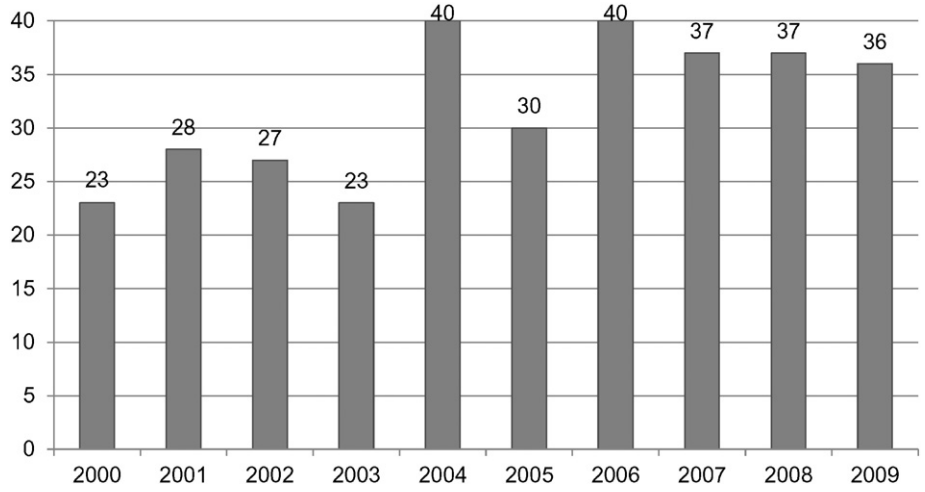

Fig. 2. Research studies by year.

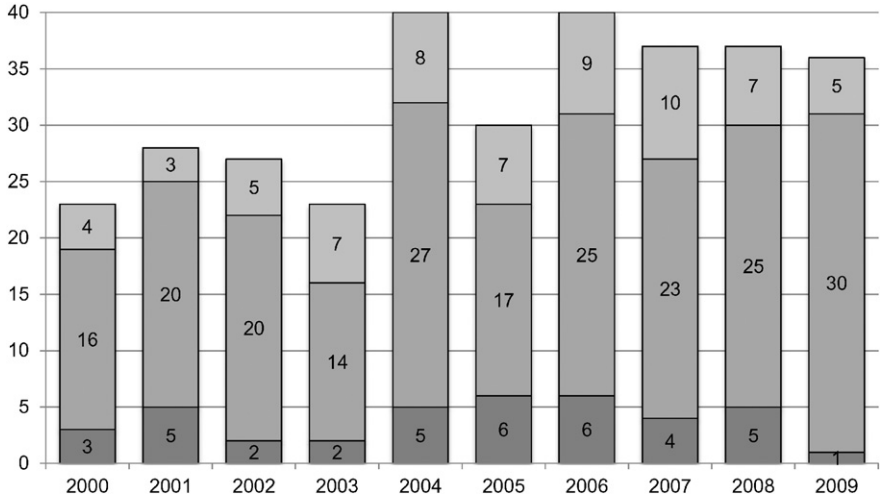

Fig. 4. Approaches by year. Note: Dark gray: qualitative; medium gray: quantitative; light gray: mixed methods.

(2015) study of three top LIS journals. A study of the decades before and after 2000–2009 would help to contextualize the amount of research identified in this unique decade.

Although only a few studies have investigated research approach in LIS literature, this study's results are consistent with existing findings that quantitative research is clearly the dominant approach. Despite Khoo, Rozaklis, and Hall's (2012) finding that ethnographic methods are much more commonly used in the LIS literature since 2006, the current study does not show an increase in qualitative methods during this decade.

It is possible that the relatively small proportion of qualitative studies in RIS research is due to the lack of research questions pointing to use of a qualitative method. However, this explanation raises the question of why the RIS subfield would have fewer research questions of this type? A future study should investigate this issue, perhaps by exploring how RIS researchers develop research questions. Another possible explanation for the smaller proportion of qualitative studies is that researchers adapt their research questions for pragmatic reasons or to capitalize on their own methodological expertise. Some of the studies in this dataset were authored by practicing librarians who may have less knowledge of a variety of research methods or less funding to support their research activities. This explanation could account for the large number of studies using questionnaires as a data collection method, since these can be administered more quickly than experiments and more easily analyzed than lengthy interview data. A future study should investigate the differences, if any, between authorship and research method in RIS research. Regardless of the reason, scholars should be encouraged to explore qualitative approaches in their research. More support may be needed for scholars choosing to pursue these approaches and more attention to qualitative methods may be needed in professional education.

The proportion of mixed methods research in the RIS literature (20%) is similar to Fidel's (2008) finding that 17% ($N = 465$) of the LIS research in four major journals used multiple methods and to Gelber's (2013) finding the same for 18% of the technical service literature.

The findings about research methods were also consistent with the findings of other studies on RIS and LIS research: descriptive studies, in particular questionnaires, are the most common research method. This finding is contrary to Richardson's (2002) claim and Chu's (2015, pp. 3) recent finding that descriptive studies no longer dominate the research. However, this may be explained by Richardson's examination of only selected important studies and Chu's analysis of only the three top journals in LIS. According to the findings of this study, RIS research still relies predominantly on descriptive methods.

The authors observed an interesting issue during data collection and analysis: researchers frequently misused the term "case study." Rather than using it to refer to a well-developed and rich study of a single case, they often applied it to surveys or other descriptive studies where data were collected at only one site. In addition, they sometimes referred to a non-research essay or a report of service as a case study.

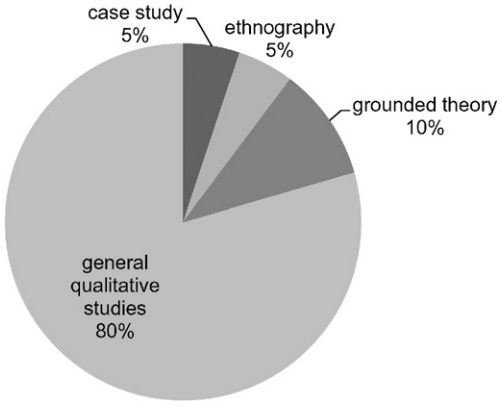

Fig. 5. Types of qualitative research methods.

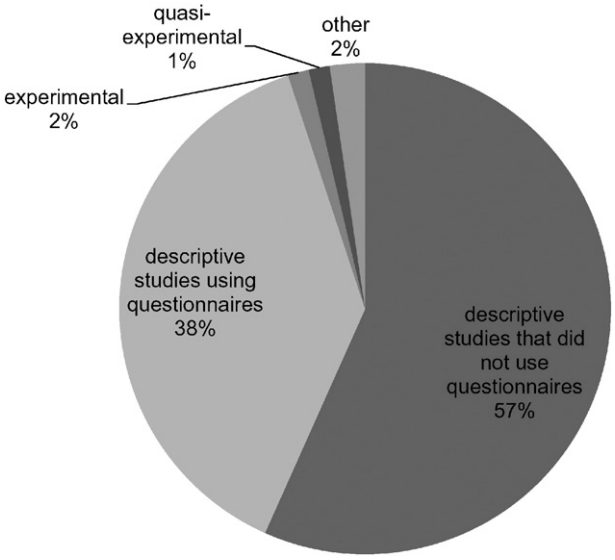

Fig. 6. Types of quantitative methods.

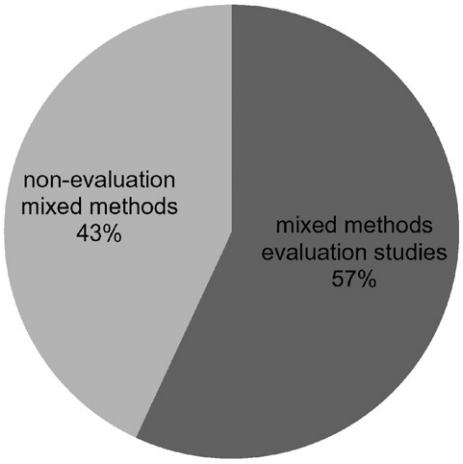

Fig. 7. Nature of mixed methods studies.

The term was often used in the abstracts of articles that were ultimately coded in the current study as commentary or reports of service, which made distinguishing research studies from other types of articles more difficult for the coders. This observation of the frequent misuse of the term "case study" is interesting to consider in light of Gelber's (2013) surprising finding about the large number of case studies in technical services. Gelber does not provide an operational definition for case study, and it is unclear whether Gelber relied on researchers to correctly report their method or whether Gelber herself read the study and made the decision. It is possible that the misuse of the term by researchers lead to the anomalous results in Gelber's study. This observation suggests two important areas of concern for research and education. First, content analyses of research methods should not necessarily rely on titles and abstracts for data collection. More investigation of whether this observation extends to other sub-topics of LIS, besides RIS, would confirm or deny this matter. Another area of concern is the possible lack of knowledge of research methods by graduates of LIS programs, suggesting the importance of research method courses. Although the authors did not investigate whether the researchers misusing research method terminology were LIS faculty or practitioners, it is possible that a lack of expertise in this area is leading to the misuse of terms.

This finding is also consistent with Cibangu's claim that LIS authors do not accurately articulate their qualitative methodology: "The first most striking discovery is that authors are unclear and lax in the uses of the basic terms of research, such as qualitative methods, qualitative research, and methodology." (Cibangu, 2013, pp. 204). In general, the findings of this study support Cibangu's call for more rigor in the use of research terminology in qualitative research. The responsibility for this would seem to lie not only with the researchers, but with peer reviewers and journal editors as well.

An interesting outcome of the study concerns those methods that were essentially absent. There were very low numbers of experimental (.93%) and quasi-experimental (.93%) studies. In addition, most of the qualitative studies had a general qualitative approach, rather than following a specific approach, such as grounded theory or ethnography. There was only one bibliometric study, which is somewhat surprising in that it is a native LIS method and has been observed in other content analyses of the LIS literature, including Järvelin and Vakkari (1990), 4.2% of the total, Julien (1996), 4% of the total, and Koufogiannakis et al. (2004), 1.5% of the total. It seems that overall, RIS researchers demonstrate little methodological innovation in their work. Whether this is a result of research questions in RIS not requiring other methods or of pragmatic/strategic choices on the part of RIS researchers is unclear.

6.1. Limitations and future research

As mentioned earlier, this study is limited to the journal literature indexed in two major LIS databases. It would be useful to examine the RIS research presented at conferences, in dissertations, or in books using the methods employed in this study to get a more complete understanding of RIS research.

An interesting area for future research would be to use the same approach to look at other decades. As previously mentioned, the decade 2000–2009 includes the explosion of digital reference services, and therefore, is a unique period in the history of RIS. Examination of the decades before and after this one would help to account for the influence of the digital reference movement on the findings. As digital reference services mature and RIS researchers move on to other concerns, there may be a reduced emphasis on program evaluation.

Most content analyses of the LIS literature are focused on English-only publications (a notable exception is Cano, 1999). This study is no exception. Future research should look beyond the English-language RIS literature, examining and highlighting the global research picture in the area of RIS.

7. Conclusion

This analysis of the research approaches and methods used to study RIS indicates that researchers in this area tend to limit their investigation to quantitative studies, particularly questionnaires. While questionnaires are an effective method for exploring some research questions, the reliance on one approach and method provides only one perspective and may limit the discipline's understanding of RIS. It is possible that an overreliance on one method may limit the research questions being asked, as only certain questions can be answered with any particular method.

The findings of this study highlight a strength of the RIS domain — that the overall amount of research being published, in relation to non-research articles, is adequate, and that at least some researchers are using qualitative and mixed methods. However, it also highlights areas for improvement in RIS research, in particular the need to employ, or at least to consider, a broader range of methods to address the diverse and complex research questions in this domain. It is hoped that this analysis will serve as an inspiration for rigorous selection and use of appropriate methods to study RIS.

References

Allen, B., & Reser, D. (1990). Content analysis in library and information science research. *Library and Information Science Research*, *12*, 251–262.

Bao, X. M. (2000). An analysis of the research areas of the articles published in C&RL and JAL between 1990 and 1999. *College & Research Libraries*, *61*, 536–544. http://dx.doi.org/10.5860/crl.61.6.536.

Blessinger, K., & Frasier, M. (2007). Analysis of a decade in library literature: 1994–2004. *College & Research Libraries*, *68*(2), 170–182. http://dx.doi.org/10.5860/crl.68.2.155.

Buttlar, L. (1991). Analyzing the library periodical literature: Content and authorship. *College & Research Libraries*, *52*, 38–53.

Callison, D. (1997). Twenty-five years of school library media quarterly. *School Library Media Quarterly*, *25*, 218–222.

Cano, V. (1999). Bibliometric overview of library and information science research in Spain. *Journal of the American Society for Information Science*, *50*(8), 675–680. http://dx.doi.org/10.1002/(SICI)1097-4571(1999)50:8<675::AID-ASI5>3.0.CO;2-B.

Chu, H. (2015). Research methods in library and information science: A content analysis. *Library & Information Science Research*, *37*, 36–41. http://dx.doi.org/10.1016/j.lisr.2014.09.003.

Cibangu, S. K. (2013). A memo of qualitative research for information science: Toward theory construction. *Journal of Documentation*, *69*, 194–213. http://dx.doi.org/10.1108/00220411311300048.

Cline, G. S. (1982). College & research libraries: Its first forty years. *College & Research Libraries*, *43*, 208–232. http://dx.doi.org/10.5860/crl_43_03_208.

Clyde, L. A. (2004). Research in school librarianship 1991–2000: Australia in an international setting. *The Australian Library Journal*, *53*, 181–199. http://dx.doi.org/10.1080/00049670.2004.10721624.

Crawford, G. A. (1999). The research literature of academic librarianship: A comparison of college and research libraries and journal of academic librarianship. *College & Research Libraries*, *60*, 224–230. http://dx.doi.org/10.5860/crl.60.3.224.

Crawford, G. A., & Feldt, J. (2007). An analysis of the literature on instruction in academic libraries. *Reference & User Services Quarterly*, *46*(3), 77–88. http://dx.doi.org/10.5860/crl.60.3.224.

Dimitroff, A. (1992). Research in health sciences library and information science: A quantitative analysis. *Bulletin of the Medical Library Association*, *80*, 340–346.

Dimitroff, A. (1995). Research for special libraries: A quantitative analysis of the literature. *Special Libraries*, *86*, 256–264.

Enger, K., Quirk, G., & Stewart, J. A. (1989). Statistical methods used by authors of library and information science journal articles. *Library & Information Science Research*, *11*, 37–46.

Feehan, P. E., Gragg, W. I., Havener, W. M., & Kester, D. D. (1987). Library and information science research: An analysis of the 1984 journal literature. *Library & Information Science Research*, *9*, 173–185.

Fidel, R. (2008). Are we there yet? Mixed methods research in library and information science. *Library & Information Science Research*, *30*, 265–272. http://dx.doi.org/10.1016/j.lisr.2008.04.001.

Gelber, N. (2013). Five years of empirical research in the area of technical services: An examination of selected peer-reviewed journals, 2007–2011. *Technical Services Quarterly*, *30*, 166–186. http://dx.doi.org/10.1080/07317131.2013.759825.

Goodall, D. (1996). It ain't what you do it's the way that you do it: A review of public library research methodology. *Public Library Journal*, *11*(5/6), 69–76.

Gore, S. A., Nordberg, J. M., Palmer, L. A., & Piorun, M. E. (2009). Trends in health sciences library and information science research: An analysis of research publications in the bulletin of the medical library association and journal of the medical library association from 1991 to 2007. *Journal of the Medical Library Association*, *97*, 203. http://dx.doi.org/10.3163/1536-5050.97.3.009.

Harter, S. P., & Hooten, P. A. (1992). Information science and scientists: JASIS, 1972–1990. *Journal of the American Society for Information Science*, *43*, 583–593. http://dx.doi.org/10.1002/(SICI)1097-4571(199210)43:9<583::AID-ASI1>3.0.CO;2-O.

Hersberger, J., & Demas, C. (2001). The current state of public library research in select peer-reviewed journals: 1996–2000. *North Carolina Libraries*, *59*, 10–14.

Hider, P., & Pymm, B. (2008). Empirical research methods reported in high-profile LIS journal literature. *Library & Information Science Research*, *30*, 108–114. http://dx.doi.org/10.1016/j.lisr.2007.11.007.

Houser, L. (1988). A conceptual analysis of information science. *Library & Information Science Research*, *10*, 3–34.

Järvelin, K., & Vakkari, P. (1990). Content analysis of research articles in library and information science. *Library & Information Science Research*, *12*, 395–421.

Järvelin, K., & Vakkari, P. (1993). The evolution of library and information science 1965–1985: A content analysis of journal articles. *Information Processing & Management*, *29*, 129–144. http://dx.doi.org/10.1016/0306-4573(93)90028-c.

Julien, H. (1996). A content analysis of the recent information needs and uses literature. *Library & Information Science Research*, *18*, 53–65. http://dx.doi.org/10.1016/s0740-8188(96)90030-4.

Julien, H., & Duggan, L. J. (2000). A longitudinal analysis of the information needs and uses literature. *Library & Information Science Research*, *22*, 291–309. http://dx.doi.org/10.1016/s0740-8188(99)00057-2.

Julien, H., Pecoskie, J. L., & Reed, K. (2011). Trends in information behavior research, 1999–2008: A content analysis. *Library & Information Science Research*, *33*, 19–24. http://dx.doi.org/10.1016/j.lisr.2010.07.014.

Khoo, M., Rozaklis, L., & Hall, C. (2012). A survey of the use of ethnographic methods in the study of libraries and library users. *Library & Information Science Research*, *34*, 82–91. http://dx.doi.org/10.1016/j.lisr.2011.07.010.

Kim, S. D., & Kim, M. T. (1979). Academic library research: A twenty year perspective. In R. D. Stueart, & R. D. Johnson (Eds.), *New horizons for academic libraries: Papers presented at the First National Conference of the Association of College & Research Libraries* (pp. 375–383). New York, NY: K. G. Saur.

Koehler, W. (2001). Information science as "little science": The implications of a bibliometric analysis of the journal of the american society for information science. *Scientometrics*, *51*, 117–132. http://dx.doi.org/10.1023/a:1010516712215.

Koufogiannakis, D., Slater, L., & Crumley, E. (2004). A content analysis of librarianship research. *Journal of Information Science*, *30*(3), 227–239. http://dx.doi.org/10.1177/0165551504044668.

Kumpulainen, S. (1991). Library and information science research in 1975: Content analysis of the journal articles. *Libri*, *41*(1), 59–76. http://dx.doi.org/10.1515/libr.1991.41.1.59.

Mahraj, K. (2012). Content analysis, 2006–2011. *Reference Services Review*, *40*, 182–198. http://dx.doi.org/10.1108/00907321211228237.

Matteson, M. L., Salamon, J., & Brewster, L. (2011). A systematic review of research on live chat service. *Reference & User Services Quarterly*, *51*, 172–189. http://dx.doi.org/10.5860/rusq.51n2.172.

Naylor, A. P. (1987). Reaching all children: A public library dilemma. *Library Trends*, *35*, 369–392.

Nour, M. M. (1985). A quantitative analysis of the research articles published in core library journals of 1980. *Library and Information Science Research*, *7*, 261–273.

Peritz, B. C. (1980). The methods of library science research: Some results from a bibliometric survey. *Library Research*, *2*(3), 251–268.

Richardson, J. V. (2002). The current state of research on reference transactions. In F. C. Lynden (Ed.), *Advances in librarianship* (pp. 175–230). New York, NY: Academic Press. http://dx.doi.org/10.1016/S0065-2830(02)80025-3.

Wynar, B. S. (1967). Reference theory: Situation hopeless but not impossible. *College & Research Libraries*, *28*, 336–342.

Zachert, M. J. (1987). Educational services in health sciences libraries: An analysis of the periodical literature, 1975-1986. *Bulletin of the Medical Library Association*, *75*, 234–238.

Amy VanScoy is an assistant professor in the Department of Library & Information Studies at the University at Buffalo. Her research explores professional work and practitioner thinking in LIS, particularly in the area of reference and information service. VanScoy earned her doctorate in information and library science from the University of North Carolina at Chapel Hill and her master's degree in library and information studies from the University of Alabama. Her work has been published in journals such as *Library & Information Science Research* and *Journal of Documentation*.

Cady Fontana is the librarian at Edith B. Ford Memorial Library in Ovid, NY. She earned her master's degree in library and information science from the University at Buffalo, where she worked as a graduate research assistant and served as president of the Special Library Association student organization. She has a passion for reference and children's services.