TRENDS IN THE RECENT INFORMATION NEEDS AND USES LITERATURE: A CONTENT ANALYSIS

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Abstract

This investigation used content analysis to examine the information needs and uses literature published 1990-1994. Analyses measured degree of interdisciplinarity evident in references cited, determined whether this literature was concerned with users' cognitive processes and with systems design and use, and identified research methods used. Secondary analyses included journal type, author type, article type, whether the literature was grounded in theory, and user groups considered. The value of this study was in the development of content analysis categories specifically applicable to the information needs and uses literature, that measure particular aspects of interest to researchers working in this area.

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Introduction

The field of information needs and uses in library and information science (LIS) is broadly defined as that which is concerned with information seeking, determining users' needs for information, and information use. In this study I use the term "users" to mean clients or patrons of libraries or other information services, as well as individuals or groups whose particular information needs are addressed by research and practice in LIS.

Research studies in this field of LIS have a long and checkered history. Scanning this literature from Berelson's (1949) study of public library users, to Hewins'

(1990) review of information needs and uses studies, information service practitioners and researchers have, with varying degrees of sophistication, attempted to discern who library patrons are, how they use libraries, and more recently, what the information needs of people are and how various sources of information help or do not help them, independent of formal information delivery systems such as libraries.

Analysis of LIS research is significant for many reasons. As Hernon (1992) and Hernon and Schwartz (1993) recognize, identifying good quality LIS research can assist researchers in their own investigations. McClure and Bishop (1989, 127) argue that careful consideration of the status of research is necessary for LIS to "progress as a discipline", and Jarvelin and Vakkari (1990) suggest that self-analysis is necessary to improve teaching in LIS. Feehan et al. (1987, 182) argue that "analysis of research in library science over time will help our discipline to monitor its progress and to identify both subjects in need of further research and underutilized research methods."

Scanning the information needs and uses literature, Hewins (1990) noted several recent trends, some of which formed the basis of this investigation. Of specific interest were Hewins' observations that: 1) the literature of information needs and uses now can be found in many disciplines; 2) research is focusing on the cognitive processes of users and relating these processes to systems design and use; and 3) some diversification is occurring in the research methodologies used to investigate information needs and uses.

In response to these observations, Hewins (1990) called for increased interdisciplinarity in the library science research of information needs and uses. She suggested that research in this area should integrate research being conducted in other disciplines (such as Psychology, Cognitive Science, Computer Science) which is relevant especially to the study of cognitive processes (Hewins 1990, 162). Other writers have made the same argument for LIS research in general (Van House 1991; Grover & Greer 1991; Hernon 1992).

Yerkey and Glogowski (1990) show through a cluster analysis of databases that many documents relevant to research in LIS can be found in non-LIS databases. Hewins (1990) also suggested that the trends to research users' cognitive processes, and to utilize research methodologies other than surveys, should be continued. Jarvelin and Vakkari (1990) assert that without analysis of methods used in LIS research, we will uncritically duplicate these methodologies, and the research results obtained.

Objectives

The purpose of this investigation was to analyze empirically the current information needs and uses literature to determine whether the trends noted by Hewins (1990) could be shown to exist. This investigation was done to test 1) whether evidence for an attempt towards interdisciplinarity can indeed be discerned in the information needs and uses literature of LIS since 1990, 2) whether this literature has continued to be concerned with users' cognitive processes and is relating these to systems design and use, and 3) whether research methods other than the typical survey are being applied to information needs and uses studies.

Methodology

The methodology used in this study was content analysis, which "attempts to identify and record the meaning of documents and other forms of communication systematically " (Allen & Reser 1990, 251). This method "assigns documents...to classes or categories to quantify one or more of their characteristics" (Allen & Reser 1990, 253). For a full description of a particular and fairly standard type of content analysis methodology, see Krippendorf (1980). Content analysis categories were developed according to the propositions to be tested, as well as several secondary areas of interest. The sample consisted of 241 randomly selected articles indexed by *Library Literature* under the terms "information needs" and "use studies", and published between 1990 and 1994. The total population included 588 articles. The sample was stratified by publication year and indexing term. Articles selected were: full-length feature articles (book

reviews, literature reviews, news items, monographs, conference proceedings, theses, encyclopedia articles, and editorials were excluded), written in the English language. Categories of secondary interest included journal type (professional/scholarly) (Footnote: The distinction used in this study between professional and scholarly journals can be found elsewhere. For example, see Ali (1985).), author type of first author only (practitioner/researcher), article type (commentary/report of service/research study), and judgments about whether the article was concerned with systems design, was grounded in theory, and what user group was considered.

The content categories developed to test the primary propositions arising from the Hewins' (1990) review were: 1) interdisciplinarity (operationalized as percent citations from outside library and information science in each article (Footnote: Using citation analysis as an indication of interdisciplinarity is an accepted measure. For examples, see Khawam (1992) and Gatten (1991).)); 2) consideration of users' cognitive processes and consideration of systems design and use; and 3) research methodology employed. The categories of research methods used in this study are conceptually comparable to those used by other researchers (eg. Feehan et al. 1987).

Cross-tabulations were done on some variables to determine whether any significant relationships existed. Results of these analyses are significant at the .05 level; the confidence level is 95%, ±5%. Specifically, significant relationships were expected for: 1) author type and interdisciplinarity (i.e. researchers cite a greater percentage of citations from outside LIS than practitioners); 2) journal type and interdisciplinarity (i.e. scholarly journals publish articles with a higher percentage of citations from outside LIS than do professional journals); 3) considerations of users' cognitive processes and concern with system design (i.e. articles that were concerned with system design also would be concerned with users' cognitive processes, (Hewins 1990)); 4) author type and theoretical grounding of the literature (i.e. researchers are more likely than practitioners to theoretically ground their publications); 5) author type and article type (research

study) (i.e. researchers are more likely than practitioners to report the results of a research study); and 6) journal type and author type (i.e., researchers are more likely to publish in scholarly journals and practitioners are more likely to publish in professional journals).

Therefore, the following null hypotheses were tested:

1) H*0* = There is no relationship between author type and interdisciplinarity.

2) H*0* = There is no relationship between journal type and interdisciplinarity.

3) H*0* = There is no relationship between cognitive viewpoint and concern with systems design or use.

4) H*0* = There is no relationship between author type and theoretical grounding.

5) H*0* = There is no relationship between author type and article type (research study).

6) H*0* = There is no relationship between journal type and author type.

Results and Discussion

INTERDISCIPLINARITY

A median of 20% of the citations listed by the authors of the articles in the sample (N=241) were from outside the field of library and information science. This percentage ranged between 0% and 100% of citations.

The first null hypothesis was rejected, since the relationship between author type and interdisciplinarity was significant ($p<0.05$). Researchers were more likely than practitioners to cite a greater number of references from outside LIS (chi-square=11.33, df=3, p=0.01) (Footnote: chi-square is Pearson's Chi-square). The second null hypothesis was also rejected, since a significant relationship was found between journal type and interdisciplinarity (chi-square=11.21, df=1, p=.008). Thus, scholarly journals published articles containing a greater proportion of citations to literature from outside LIS than professional journals. As well, a significant relationship was found between articles grounded in theory and degree of interdisciplinarity (chi-square=25.23, df=1, p=.000); theoretical articles contained more citations to literature outside LIS than atheoretical articles. Articles concerning systems design and use were also found to be negatively

correlated with degree of interdisciplinarity (chi-square=23.88, df=1, p=.000), since these articles contained fewer citations from outside LIS than those articles not concerned with systems design and use.

COGNITIVE VIEWPOINT and SYSTEMS DESIGN AND USE

Twenty-four percent of the sample articles studied or considered users from a cognitive viewpoint, and 51% of articles were concerned with systems design. However, there was no relationship between articles about system design and those concerned with cognitive processes (chi-square=7.84, df=6, p=.250). Therefore, those articles which discussed systems design were no more likely also to be concerned with users' cognitive processes than could be expected by chance alone. Null hypothesis 3 was therefore accepted.

RESEARCH METHODS

Figure 1 (38K) shows that written questionnaires and interviews (survey methods) totalled 55% of research methodologies (68% of articles were research studies). Other research methods include experiments (6%), transaction log analyses (4%), ethnography (4%), and citation analyses (4%). The "other" category accounted for 9% of methods used, and included content analysis, unobtrusive observation, and cluster analysis, among others. Eighteen percent of research studies used a combination of methods, in which one was clearly not dominant. A significant relationship was found between author type (Figure 2 (143K)) and research method (chi-square=37.79, df=18, p=.004). Researchers are more likely to use experiments and to use more than one research method than practitioners. As well, practitioners are more likely to use survey methods than researchers.

THEORY

Of the 163 research studies identified in the sample, only 28% were theoretically grounded (i.e. were also identified as "theoretical"), while 72% were not apparently theoretically grounded. Overall, 68% of the literature was atheoretical (Figure 3 (160K)).

A relationship was found between author type and theoretical grounding of the literature (chi-square=42.02, df=3, p=.000). Researchers were significantly more likely to theoretically ground their publications, whether these were research studies or not, than practitioners. Thus, null hypothesis 4 was rejected. As well, a significant relationship was found between journal type and theoretical grounding of the literature (chi-square=41.83, df=2, p=.000). Scholarly journals were more likely to publish theoretical articles than professional journals. However, the fifth null hypothesis was accepted, since there was no association between author type and whether articles were research studies or not (chi-square=.395, df=3, p=.941).

ARTICLE TYPE

In the sample as a whole, 25% of articles were commentary, 7% were reports of service, and 68% were research studies (Figure 4 (151K)).

JOURNAL TYPE

The articles were largely published in professional journals (74%) (Figure 5 (140K)). Seventy-one percent of research studies were reported in professional journals, while 29% of research was published in scholarly journals. In scholarly journals only, the proportion of articles reporting research studies was 77%.

AUTHOR TYPE

Researchers comprised 39%, practitioners 48%, and others (mostly Master's and Doctoral students) 5% of authors. In eight percent of articles, the author type could not be determined. Researchers were about equally likely to publish in scholarly journals (where they published 49% of their articles) and in professional journals (51%). Practitioners were much more likely to publish in professional journals (94%) than in scholarly journals (6%). Thus, the relationship between author type and journal type was significant (chi-square=55.46, df=6, p=.000), so null hypothesis 6 was rejected.

USER GROUPS

User groups examined in this literature included scholars (22%), students (19%), other specific groups (10%), professionals (9%), the general public (8%), and

non-professional employees (2%) (Figure 6 (139K)). The largest proportion (30%), however, did not specifically refer to any one user group.

Discussion

While a median of 20% citations outside LIS appears to reveal a degree of interdisciplinarity, a basis for comparison is necessary. Grover and Greer (1991,107) report that 30% of citations in one sample of research articles published in LIS journals between 1981 and 1985 were from outside LIS. Qiu (1992) notes that in the field of international librarianship, 13% of references were from outside LIS. Peritz (1981) found in research papers published in core LIS journals from 1950 to 1975, that 20% of citations were from outside LIS. Many other disciplines have been found to cite greater percentages of citations outside their own disciplines. Rigney and Barnes (1980) report that between 1936 and 1975, the mean percent of citations outside disciplinary boundaries for Anthropology, Economics, Political Science, Psychology and Sociology were 49%, 21%, 59%, 27% and 42%, respectively. Choi (1988) found that in Anthropology 70% of citations in core journals originated from outside that discipline. McCain and Whitney (1994) review several assessments of interdisciplinarity and report that Education, Management, Demography, Operations Research, and Toxicology have rates of citation outside their own disciplines of 57%, 25%, 44%, 46%, and 84%, respectively. For researchers concerned about 'subject dispersion', the 20% rate found for LIS may be a source of comfort, when compared with other disciplines. However, for researchers who view interdisciplinary research trends as appropriate, and who seek to move research in this direction (eg. Hewins 1990), the lower rate of interdisciplinarity found in LIS may be regrettable.

Some of the additional findings warrant comparison with results reported by others. Although I found that about half of all articles considered the design and use of computerized information systems, Jarvelin and Vakkari (1993) report that a decade ago, 29.2% of articles in core LIS journals were about information storage and retrieval, a category roughly comparable to the present study's

"concerned with system design" category. Therefore, this increased level of interest in systems design and use in the literature may be reflecting an increased level of concern about these issues in practice.

The predominance of survey methods (written questionnaires and interviews; 55%) shows that these methods are still the methods of choice for research in information needs and uses. The finding that almost one-fifth of research studies employed more than one method perhaps reflects the increasing emphasis on triangulation of methodologies in all the social sciences. Analyses of research methods used in general LIS research (i.e. not limited by specific area) have also found that survey methods are prominent. Dimitroff (1992) reports that various researchers have found that surveys account for 20.3%, 38% and 41.5% of research methods used in LIS. Jarvelin and Vakkari (1993) report that the survey method was the most used research design in LIS between 1965 and 1985, and Seymour (1991) reports that surveys continue to be the most commonly used research method in studies of online public access catalog (OPAC) users. Kumpulainen (1991) suggests that survey methodology is popular because it is known, understood and offers quick results. Another reason for the domination of particular research methods in LIS is that these may be the most appropriate ones to investigate the research questions that have been posed. However, it is clear that with a refocussing of the research questions posed, especially in information needs and uses, a variety of research methods is appropriate (Jarvelin & Vakkari 1993). When information-seeking behaviour is investigated from the point of view of the seeker, methodologies such as Chatman's use of ethnography (1992) may prove to be more appropriate research methods.

The results of the analysis of the theoretical basis of our literature were disappointing. If we accept the argument made by many critics of LIS research, such as Van House (1991, 87), that atheoretical research "is simply description," then these figures are a sobering indictment of research in information needs and uses.

One unexpected finding was that 68% of the literature consisted of reports of research studies. This result can be compared with several others which found that research comprises 23.6% to 31% of total articles (Dimitroff 1992). However, the results from other studies were based on examination of LIS literature in general. Jarvelin and Vakkari (1993) report that in 1975, 57% and in 1985, 54% of articles in core LIS journals could be classified as "research".

The findings about what user groups are being studied is an important one for researchers concerned that user studies reflect existing power relations in society, and tend to study the privileged (eg. scholars and professionals) as opposed to the "average citizen". Peritz (1980/81) reports that of research papers published in core LIS journals between 1950 and 1975, only 7% were concerned with general users, 48% were concerned with professionals, and 15% with students. Since that time, a concern for professionals seems to have diminished, while interest in students has increased. Although scholars and students may be studied for reasons of convenience, deliberate decisions about groups of particular interest are made as well (Chatman 1992).

Conclusions and Suggestions for Further Research

One goal of this work was to provide a means by which the claims made by reviewers such as Hewins (1990) may be tested empirically. It is helpful for researchers in the field of information needs and uses who are concerned with the direction of research to have an empirically valid and reliable basis upon which to make judgements. Thus, the major value of this study was in the development and testing of content analysis categories that are specifically applicable to the information needs and uses literature. Using the model presented here, a longitudinal analysis of the information needs and uses research could be done to provide a comparison for the results obtained in this study.

As well, building on the rather crude measurement of interdisciplinarity used in this study, research might address the ways in which outside resources are used in LIS research (eg. for comparison? to provide theoretical models?). An analysis

of the disciplines and the specific authors that are being especially drawn upon by LIS researchers in information needs and uses would also be of interest (eg. Gatten 1991 examines the uses of sociology literature in LIS).

The present study can provide direction for developing an empirically based understanding of some persistent concerns in our field--the validity, utility, sophistication and scholarliness of our research and our literature.

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